

AMERICAN ARTISAN



RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING • SHEET METAL CONTRACTING

ESTABLISHED
1 8 8 0

LAMNECK

Big 4

PRE-ENGINEERED
PRE-FABRICATED
PRE-PRICED

Plus

LAMNECK Volume Production Doubles Your Capacity

Save time, trouble and expense by installing Lamneck Prefabricated Duct and Fittings. They are pre-engineered to eliminate your costly shop lay-out work. You can rely on our fittings—for they are designed by skilled heating engineers.

Prefabrication means ready to install. No delays of installation caused by tedious shop work. Let your men go to work today installing today's job without waiting for

your overworked shop.

Give your price for the job immediately, based on our known costs that can be found without guesses and doubtful estimates. Use Lamneck pre-priced fittings to make accurate bids.

To these three valuable features, add Lamneck's Volume Production, available through your nearby jobber, to double your business volume.

Your Distributor—carrying as he does ample stocks to supply your needs, gives you every benefit of our varied line, volume production and engineering experience. Talk to your Lamneck distributor. He will show you how to save days and hours on every job.



Specify

LAMNECK

LAMNECK PRODUCTS INC. Middletown, Ohio

Simplified Furnace Pipe and Fittings and Prefabricated Duct and Fittings for all Types of Heating and Air Conditioning Systems.

Auer Adjustable Registers

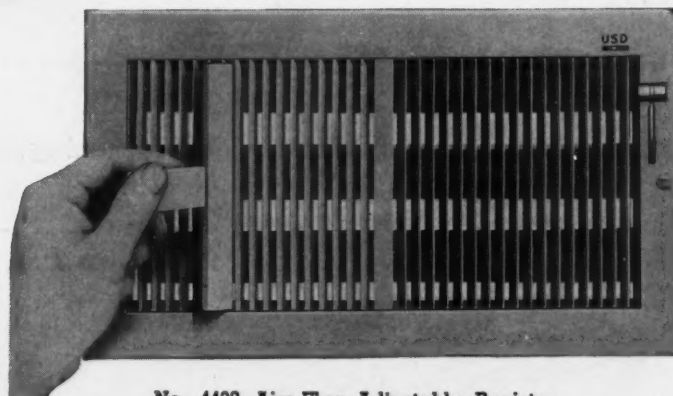
*To fit
Every
Purpose*

• Auer adjustable directional flow air conditioning registers are made in several popular styles to suit your needs as to cost and purpose.

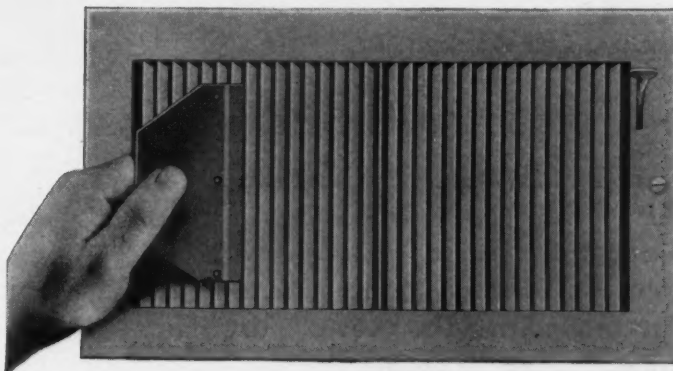
In the "4000" series Airo-Flex you have a register with multi-louvres adjustable from the front, with indicator to show adjustment, and with grille blades also adjustable with turning tool furnished.

In the "8100" Dura-Flex series, you have a super quality register with adjustable grille bar unit, built separately from border and frame, and with single louvre.

The "7000" Airo-Flex series gives you a high-grade but economical register with 1-piece face, in which the fins may be satisfactorily adjusted at time of installation for downward degree of air flow. This is a single louvre register.

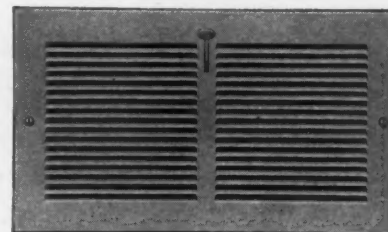


No. 4432 Airo-Flex Adjustable Register



No. 8132 Dura-Flex Adjustable Register

Other styles of Auer air conditioning registers, and also gravity registers, and intakes for all systems are described in complete new Auer Register Book 41. Ask for your copy.



No. 7032 Airo-Flex Adjustable Register

The Auer Register Co., 3608 Payne Ave., Cleveland, Ohio

AUER REGISTERS
& GRILLES · For Air Conditioning *and* Gravity

AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

WITH WHICH ARE MERGED

FURNACES
SHEET METALS

AND

Warm-Air
Heating

J. D. Wilder, Editor

A. A. Kennedy, Assistant Editor

Vol. 110, No. 6

June, 1941

Founded 1880

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In This Issue

TWO conventions, reported in this issue, illustrate the pressing desire of men in our trade to foresee the future. Since these addresses were carefully chosen by association secretaries, their authors thinking on current problems may be of some benefit in clarifying readers' thinking.

"Poor man's cooling, a term aptly applied to attic fan cooling is proved feasible for the north, central area in the story of the sales success of E. B. Sickie on page 47. His success has come principally from commercial establishments who need some measure of cooling and ventilating relief which Sickie provides with attic fans.

A reader operating a hardware store wanted to install cooling by refrigeration, using the existing heating duct system, so we asked Engineer Ross to develop the design and prepare a suggest layout. The result is the cooling article on page 54 which is, we think, an excellent study of cooling design for medium commercial spaces.

Part 3 of "The Installation and Use of Attic Fans," bulletin of the Mechanical College of Texas appears on page 58. This installment describes ways and means of choosing and finishing the openings through which air reaches and leaves the fan. Since proper openings are essential to quiet, satisfactory operation, this installment is important.

Readers may have noted that we have been leading up to a series of articles describing a course in sheet metal training "streamlined" for today's need for speed in teaching. Author Zideck explains on page 75 how to organize the class so that one instructor can handle the men and produce articles which are definitely "production." Later articles in the series will describe and show exactly how men should be taught.

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More than 8,000 copies of this issue are being distributed

DEFENSE AND THE FUTURE...

Copy of Letter to users of Products of
The International Nickel Company, Inc.

The International Nickel Company, Inc.

EXECUTIVE OFFICES: 67 WALL STREET

New York,

ROBERT C. STANLEY,
PRESIDENT

April 17, 1941.

Dear Sir:

Our plants, in common with those of most of America's industrial units, are working at their peak on defense production. In spite of this, hardship is being inflicted upon many consumers of our products who in the past have aided us in building a great business, and upon whom we must depend for our future success.

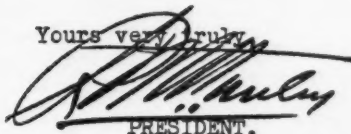
As this letter is written the monthly production rate of The International Nickel Company of Canada, Limited is already 20% above last year; three times that of 1929 and four times the peak rate of the last war. Its facilities have been increased to supply current defense demand and further increase in output will be available this year.

Upon the conclusion of this devastating war the future success of your business and ours will depend in large measure upon the retention of the good will of our customers. Any effort we can make, not conflicting with our full support of the defense program, should be directed toward this vitally important objective.

To this end we wish to offer our services especially to those customers whose requirements cannot for the moment be filled. One practical means of rendering such service is to offer you the assistance of our technical staff in solving problems of material arising from the temporary lack of nickel.

Our problems are complex and constantly changing and can only be solved through cooperation. As we see it, a large part of the solution lies in making clear the situation which we face. Your help and advice will be of invaluable assistance. It is our purpose to follow this letter with a personal call from one of our representatives, if you so desire, who will discuss with you in more specific detail our mutual problems.

Yours very truly,



PRESIDENT.

RCS:JJS

NEW PROFIT-MAKING IDEAS

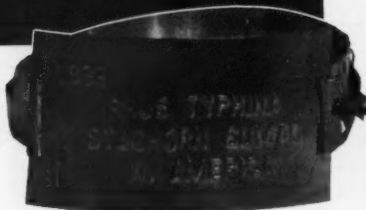
*with U.S.S.
Stainless Steel*



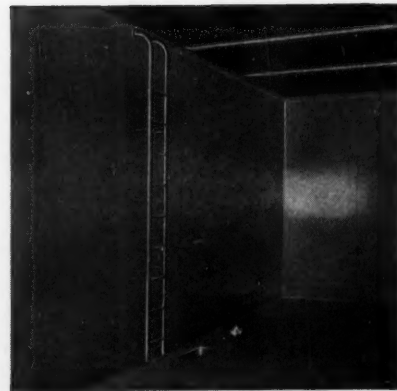
MAKING CHEESE in a stainless steel tank. Such a tank can be easily fabricated with your usual shop equipment. There's a big opportunity in dairies, food plants, soft drink plants for sanitary equipment like this.



NEW ARMY CAMP TRAY of U·S·S Stainless Steel. Combines tray and dishes in one unit. Sanitary, easy to wash, non-breakable, fireproof. Women who have seen it, immediately wanted a similar type for a hostess tray. There's an opportunity waiting for someone.



★ ★ ★ ★ ★ Because of the importance of U·S·S Stainless Steels in the National Defense Program, temporary delays in providing for normal peace-time requirements are unavoidable. We believe we can count on your understanding cooperation. Production facilities are being rapidly increased and inevitably we shall win this race against time and national need. U·S·S Stainless will then be more plentiful than ever before.



BREWERY VAT fabricated from straight sheets of U·S·S Stainless with a ladder made of stainless steel tubes. Stainless used because of cleanliness and freedom from corrosion. Soft drink makers, distillers, chemical plants offer similar possibilities.



BUTCHER RACK for meat-cutting equipment with back panel and hooks of easily cleaned U·S·S Stainless Steel. Every butcher shop, hospital, restaurant, hotel offers an opportunity for selling a specialty like this.



TREE TAGS The one at the left was made of U·S·S Stainless Steel—looks practically new after one year's exposure. Other tag made of inferior metal is corroded through in same length of time. Market: parks, nurseries, greenhouses or any industrial firm needing outdoor identification tags for its products.

U·S·S STAINLESS STEEL

AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York*
CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
NATIONAL TUBE COMPANY, *Pittsburgh*

Scully Steel Products Company, *Chicago, Warehouse Distributors* • United States Steel Export Company, *New York*

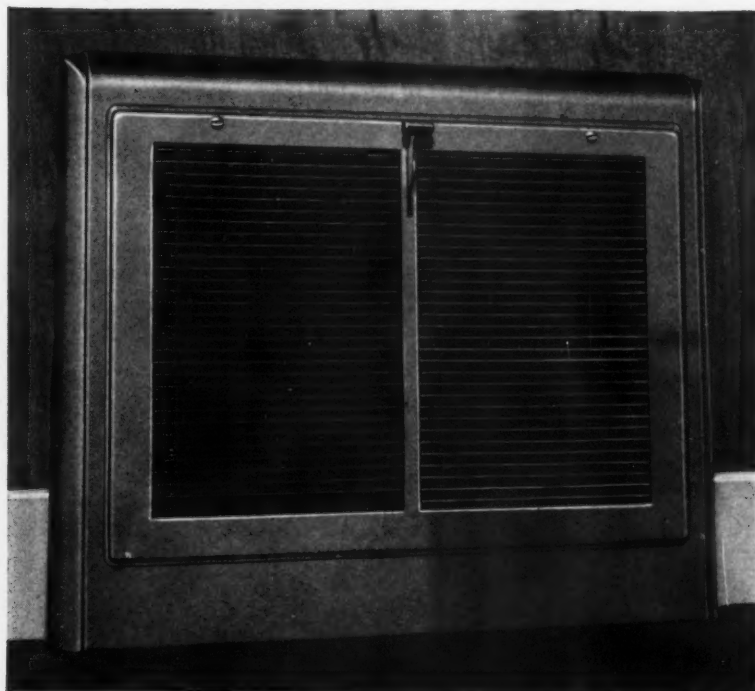


UNITED STATES STEEL

America's Finest Gravity Register

ALSO AN EXCELLENT CONVERSION REGISTER

*Now Being
Shipped from Stock*



The New



No. 130 Series

Check Its Superiorities!

✓ Attractive Appearance—modern as today, yet sufficiently conservative and inconspicuous to appeal to everyone.

✓ New Metalustre Finish—a rich brown lacquer finish in excellent good taste, attractively priced in Group 1 (the same price as Black Japan finish).

✓ Large Free Area—approximately 80%, which means that size 12 x 8 can be used on a 10" pipe.

✓ Low Resistance—Exhaustive tests conclusively prove the resistance of No. 130 to be considerably less than that of the conventional registers of this type, due to the fact that the fins are perpendicular to the face. Low resistance means high efficiency.

✓ Adjustability—Fins may be adjusted up or down as desired with wrench furnished.

✓ Excellent as Replacement Register—Whenever an existing gravity installation is to be changed to air conditioning. New valve mechanism holds securely in any position even when used with air conditioning. Never requires adjustment.

✓ IMPORTANT—The overall dimensions of No. 130 Series Registers are identical with those of all other Hart & Cooley Gravity Baseboard Registers, making replacement a simple matter.

SIDEWALL
REGISTERS
AND RETURN
AIR INTAKES
TO MATCH



TURNING
THE FINS

Show No. 130 to Your Prospects. It Will Help You Clinch the Sale!

HART & COOLEY MANUFACTURING CO.

Warm Air Registers • Air Conditioning Grilles • Damper Regulator Sets • Dampers • Chain • Pulleys

HOLLAND



MICHIGAN

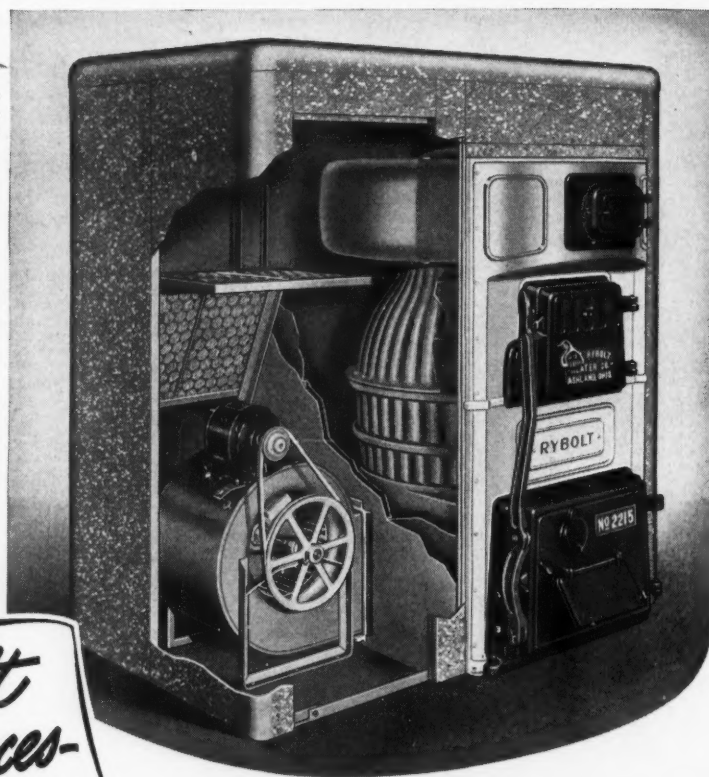
Chicago Office: 61 W. Kinzie St.

Philadelphia Office: 1600 Arch St.

Western Representatives: John T. Rowntree Co., Los Angeles, San Francisco, Portland, Seattle, Salt Lake City, Denver

Rybolt

CAST IRON COAL-FIRED WINTER AIR CONDITIONER



★
Re-designed
and Refined
to Meet More
Fully Today's
Demands

★
Full Height
Reversible
Blower Cabi-
net. Handsome
and Compact

*Rybolt
Announces-*

SERIES 151 — THE AUTOMATIC HEATING UNIT OF TODAY

Formerly known as Series 157, this RYBOLT automatic heating unit has been re-designed and modernized to meet more completely present day requirements. It is decidedly more compact and attractive and at the same time has achieved a new high standard of operating efficiency, convenience and economy. While retaining the time-tested and approved features—such as the famous RYBOLT Series 15 Coal-Fired Furnace as its heating element—which made Series 157 an outstanding Winter Air Conditioner, special new features and refinements have been added to make it more completely adapted to home owners' requirements of today. It is completely modern and fully automatic with all parts perfectly coordinated to make the Cast Iron Coal-Fired Series 151 everything that could be desired in a Winter Air Conditioner.



TRADE MARK

WRITE FOR FOLDER—JUST OFF THE PRESS



THE RYBOLT HEATER COMPANY
615 MILLER STREET • ASHLAND, OHIO

a Control System FOR EVERY NEED



THE completeness of the M-H line makes it possible for you to center the responsibility for your controls in one place . . . to have one reliable source of supply, with service everywhere — and to carry but one stock of controls.

This book gives you detailed information, instructions and diagrams regarding the use of these controls on a wide variety of warm air installations for coal, gas or oil. Write for your copy Now.

Minneapolis-Honeywell Regulator Co., 2726 Fourth Ave. S., Minneapolis, Minn. Canadian Plant: Toronto. European Plant: London. Company owned branches in forty-nine other cities.

MINNEAPOLIS-HONEYWELL
CONTROL *Systems*

THE J. M. & L. A.
OSBORN CO

*Today's Conditions are
a Test for us All...*

STEEL, IRON, STAINLESS,
ALUMINUM, COPPER, ZINC
AND PERFORATED SHEETS

TIN AND TERNE PLATE

TROUGH, GUTTER AND
CONDUCTOR PIPE

AIR CONDITIONING AND
WARM AIR FURNACES

REGISTERS

FURNACE PIPE
AND FITTINGS

ASBESTOS AND ASPHALT
ROOFING AND SIDING

VENTILATORS AND
VENTILATING FANS

TOOLS AND MACHINERY

CLEVELAND
BUFFALO
CINCINNATI
DETROIT

Few of us realize the true value of a dependable source of supply until conditions such as created by the national defense program make themselves felt. Now, the ability to get materials promptly is becoming more important day by day.

OSBORN, quite naturally, is proud of its 82 years of service to the sheet metal industry. And in these times, it is particularly pleasing to us that our large warehouse facilities enable us to not only make prompt shipments on defense orders, but also supply the normal needs of our regular customers.

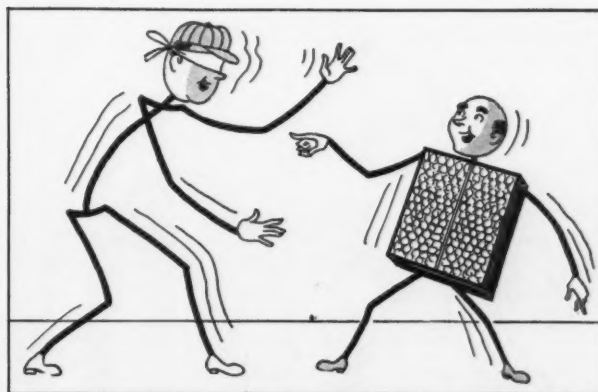
Temporary shortages and defense work are, of course, making certain materials increasingly difficult to obtain. But, aside from these "tight" items which we can furnish only on priority order and for which substitutes are available, OSBORN stocks are unusually complete. From them, it is our aim to care for the needs of our regular trade to the best of our ability. This is our way of saying that OSBORN will remain "a dependable source of supply".

A DEPENDABLE SOURCE OF SUPPLY FOR 82 YEARS



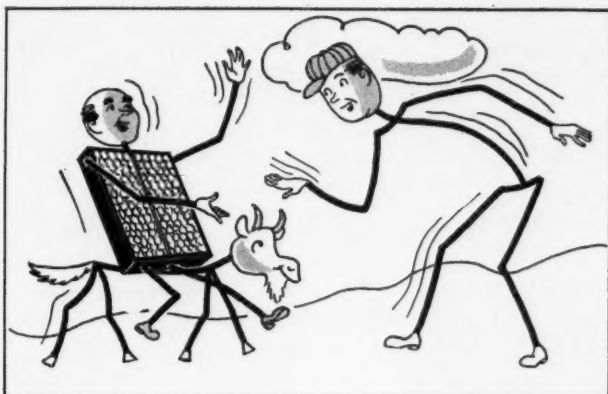
Dust-Stop Man: Do you know that forced warm air furnaces are blowing Uncle Sam's coin right at you . . . and you can't see it?

Heating Contractor: How come?

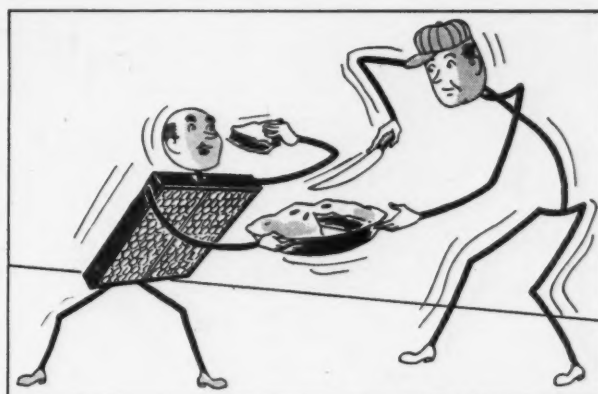


D. S.: You're being blind to a lot of very profitable Dust-Stop* Filter replacement business you can get this summer.

H. C.: G'wan. Nobody changes filters during the summer months. It's hard enough to get them to change 'em during the heating season.



D. S.: Quit kidding. More and more people are finding out that they can run their furnace blowers to circulate clean, fresh air. And that's not all!



D. S.: Getting Dust-Stop business is as easy as eating pie. They give you an entirely new set of dealer helps specially designed for this summer selling.

H. C.: Yeah . . . and I mortgage my shop to get them.



D. S.: No Siree! They're free at the manufacturer's or your jobber's. Ask for the new Dust-Stop summer sales helps. You'll get free postcards, imprinted with your name and address, and free blower cabinet labels to remind customers to change their filters! No charge—just ask for 'em!



H. C.: Gosh, I ought to be able to pull in a lot of extra profit with *that* setup. And once I get inside of a customer's house . . . a few more suggestions here and there usually gets me **EVEN MORE** jobs. Son, you're a lifesaver!

FIBERGLAS* DUSTOP* AIR FILTERS

© T.M. Reg. U. S. Pat. Off.

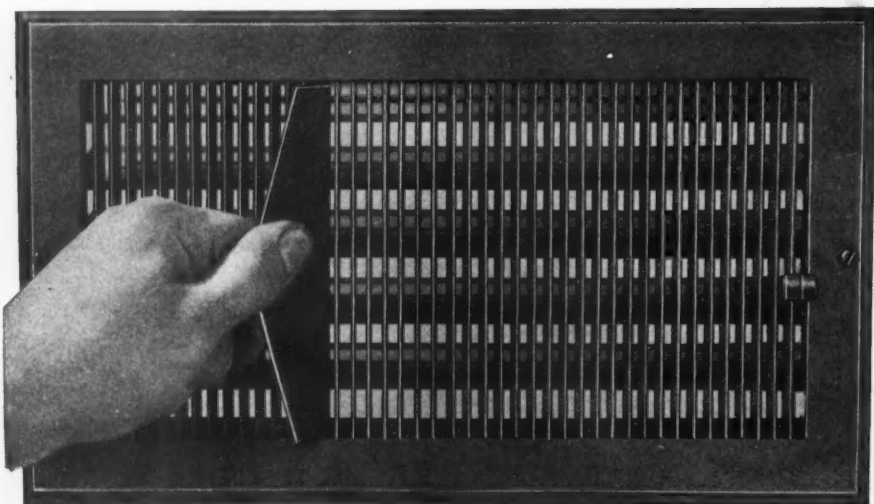
Made by Owens-Corning Fiberglas Corporation, Toledo, Ohio

DIRECT CANADIAN INQUIRIES TO FIBERGLAS CANADA, LIMITED, OSHAWA, ONTARIO



U.S. No. 256

4-WAY FLOW FLEX-BAR



AN IMPORTANT NUMBER TO REMEMBER

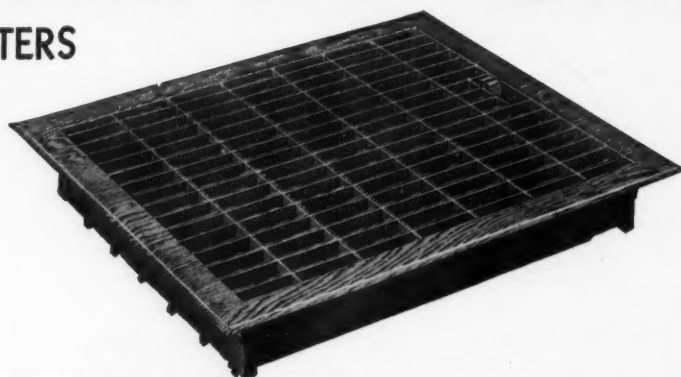
When you want full face coverage, low resistance, multiple valves for any degree of Up or Down flow, and complete flexibility in adjusting side flows to meet the needs of the job install U. S. No. 256 FLEX-BAR Air-Conditioning Registers.

They are durably built, with bar strength to take any required number of settings without damage to the register. Remember No. 256 on your next air-conditioning job.

And Here's Another U. S. FIRST!

U. S. TRUSSTEEL FLOOR REGISTERS

The outstanding Line of Floor Registers. Easiest to operate, Seamless — neatest Corners. Has no Equal in the Register Industry. Standard Mesh $\frac{5}{8}$ x 1-15/16, also made in Mesh 7/16 x 1-15/16, your choice of either mesh.



Write for Latest 41 A-C Catalog

UNITED STATES REGISTER CO.

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY • SAN FRANCISCO • NEW YORK, N. Y.

CANADIAN MANUFACTURING DISTRIBUTORS — Canada Register & Grille Co., Ltd., Toronto, Ontario

MAKE MORE MONEY with Westinghouse

SALES PROGRAM



CO-OPERATIVE NEWSPAPER
ADVERTISING



TRADE PAPER
ADVERTISING

MAGAZINE
ADVERTISING



"PROFIT
REVIEW"
MAGAZINE

SWEET'S
CATALOG



DEMON-
STRATION
HOME



TELEPHONE
BOOK ADV.



SELLING
TOOLS



IDENTIFICATION
SIGNS



ENGINEERING
SCHOOLS

SUMMER AIR CONDITIONING As easy to install as a heating plant



Refrigeration engineering is out. The complete system is factory built, charged and tested—shipped ready to install.

Nine Unitaire Conditioners—1, 2, 3, 5, 7½, 10, 15, 20 and 25 hp size. Get this plus-profit business now.

PRODUCT + PROGRAM = PROFIT

Success demands quality products and a quality program. Westinghouse offers both and this is the fundamental reason why Westinghouse can make more money for you. Records of many distributors and dealers prove it! Here are the three fundamental steps in the Westinghouse Program:

ADVERTISING

Co-operative newspaper and telephone book advertising to reach your prospects, backed up by national advertising that maintains 95% consumer acceptance of a complete line of products for the home.

DISPLAY

Brilliant neon identification signs. Colorful backgrounds and banners—to help make your showroom the kind of place where people will like to come and BUY. Plus a floor plan for financing displays and stocks of equipment.

SELLING

Tested, effective sales tools! Seasonal campaigns full of selling punch! Programs to train, control and stimulate your salesmen. Apply that to the line that never lets you lose a sale and the answer is that

IT ALL ADDS UP TO
MORE PROFIT FOR YOU

GET THE FACTS!

PRODUCT



OIL BURNING UNITS



GAS BURNING UNITS



COAL BURNING UNITS



Westinghouse

HOME HEATING AND AIR CONDITIONING

Westinghouse Electric & Manufacturing Co.,
Springfield, Mass.

Please send the following:

- ☐ Complete catalog of Home Heating Equipment.
- ☐ Complete catalog of Packaged Summer Air Conditioning Equipment.
- ☐ Have your representative call.

Name _____

Firm _____

Address _____

City _____ State _____

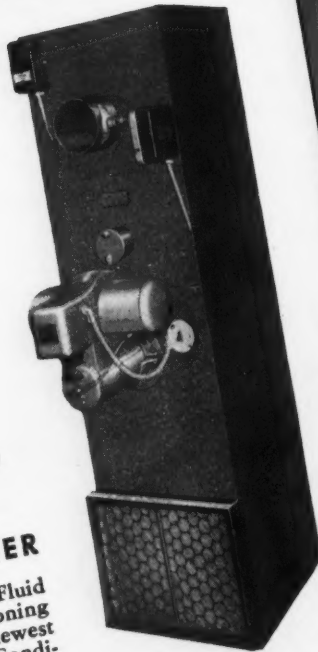
HOLD FLUID HEAT'S

And Win Every Deal in

A
♥

New "PACKAGE" AIR CONDITIONER

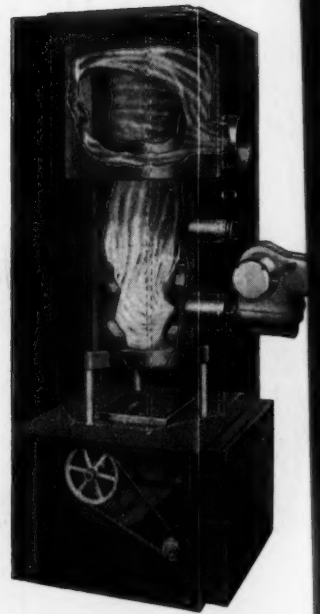
Here's the newest Fluid Heat Air Conditioning Furnace — the newest thing in the Air Conditioning field today. An Air Conditioner specially designed for small one-story and cellarless homes, small buildings of all sorts and can be installed in a space little larger than an average closet. Delivered completely assembled, including controls. Simply uncrate, attach burner, hook up, and it's ready to run. The RU-7 cuts installation costs to the bone—builds sales and profits in a brand new field. Bonnet Rating—70,000 B. T. U.



K
♥

FLUID HEAT RU-8 and RU-12

Here's the Air Conditioner specially designed to sell to those thousands of homes where floor-space is limited, where other Air Conditioners simply can't be installed. Flue located over burner to reduce space to absolute minimum. One-piece exchanger, with built-in refractory. Made in two popular sizes, rated at 80,000 and 120,000 B. T. U. at the Bonnet.



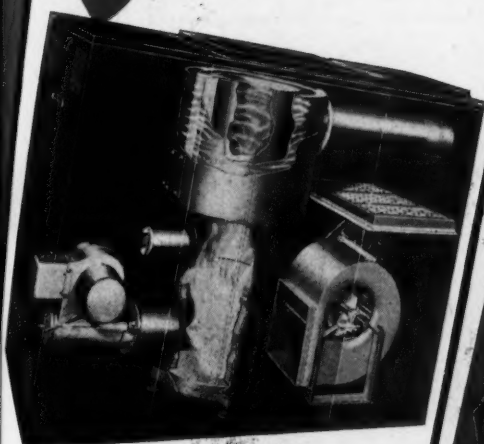
YES, you hold a "Royal Flush" on every "Deal," when you handle the complete Fluid Heat Line of up-to-the-minute, mass-production-built, low-cost Air Conditioning Furnaces. Every Unit is a complete Air Conditioner, heats, circulates, filters and humidifies the air. And every Unit is "tops" in attractiveness with horn-like "hammered" infra-red baked gray enamel finish, attractively trimmed. There's a Unit for

every purpose, engineered with plenty of features to sell quickly—and to perform! And plenty of thought, too, has been given for the man who installs and services these Units. All Units are delivered with built-in refractory chambers; equipped with Fluid Heat's "World's Economy Champion" Oil Burner, and heavy copper-bearing welded steel exchangers. Get into the Air Conditioning "Game" today—with

"ROYAL FLUSH"

the Air Conditioning "Game"

Q
♥



FLUID HEAT FHR UNITS

To homes which want modern appearance at low cost Fluid Heat's FHR Units are easy to sell and easy to install. Rated 80,000 and 120,000 B. T. U. at the Bonnet.

J



FLUID HEAT FHA UNITS

Here's the Fluid Heat Unit for the better-class large home. A specially engineered Unit that's easy on the eye, easy to sell, and easy on the customer's pocketbook afterwards. Rated 170,000 and 215,000 B. T. U. at the Bonnet.

10
♥



FLUID HEAT HOT WATER HEATER

Here's the Unit which can add an extra profit to practically every Air Conditioner sale when you handle the Fluid Heat Line. The Fluid Heat Hot Water Heater has a maximum capacity of 130 gallons per hour, more than ample to handle the requirements of an average family. Equipped with Fluid Heat Oil Burner, "World's Economy Champion," this unit automatically provides hot water at far less than the usual cost. Oil can be taken from same tank as supplies heating unit.

the "hand" that's set to win on every "deal"—the Fluid Heat Line. Your territory may still be open. Mail the Coupon—or wire—TODAY.

Mail Coupon Today

FLUID HEAT DIVISION, Anchor Post Fence Co.
6731 Eastern Ave., Baltimore, Md.

Please send me at once, details of the Fluid Heat Air Conditioners and the complete Fluid Heat Line.

Name.....

Firm.....

Address.....

City..... State.....

fluid heat

AIR CONDITIONER

"World's Economy Champion"

A PRODUCT OF THE ANCHOR POST FENCE COMPANY,
BALTIMORE, MD., ESTABLISHED 1902

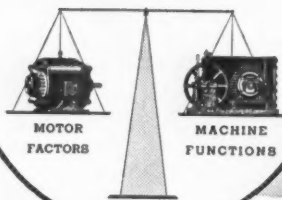
For
Improved Performance
That Steps Up Sales
Specify **CENTURY**
Job Selected
MOTORS

★ Whether you buy, manufacture, sell or install air conditioning, it's to your advantage to be sure that the electric motor drive accurately meets the demands of every job.

The specialized demands of air cooling, heating, circulating, and fluid pumping present an opportunity for improved performance through the selection of motors designed for these specialized jobs. To meet these conditions, Century provides a wide range of types and sizes of Job Selected Motors from fractional to 600 horsepower.

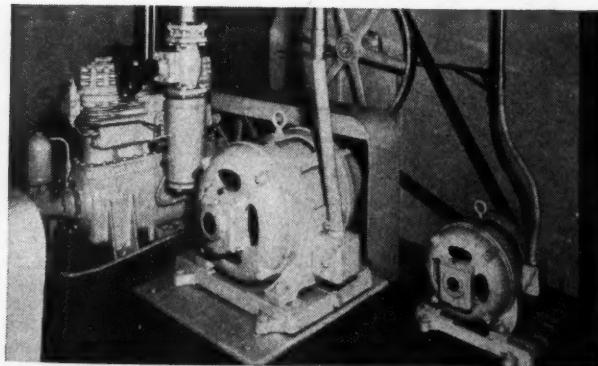
Century Job Selected Motors contribute much to top performance, and satisfactory operation — and the assurance of improved performance means increased sales and profits to you. Call your Century Motor Specialist to find out all the advantages of Century Job Selected Motors.

CENTURY
Job Selected
MOTORS

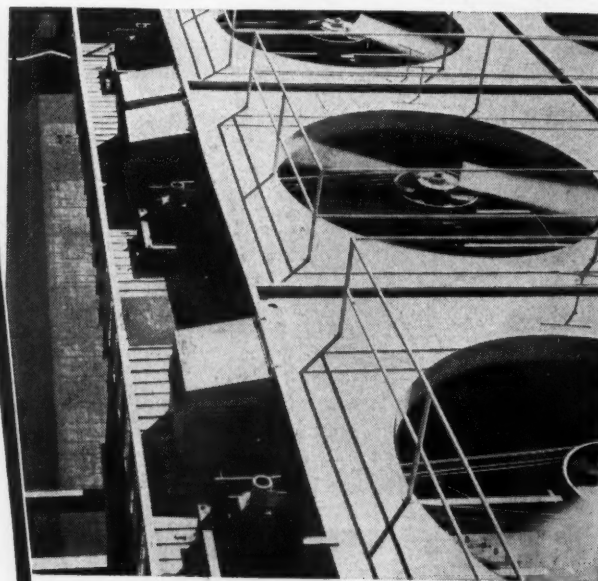


Century
MOTORS

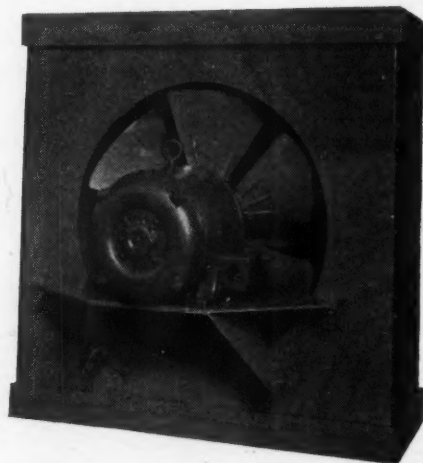
One of the Largest Exclusive Motor and Generator Manufacturers in the World



40/20 horsepower SCHM 2-speed motor on a refrigeration compressor. 7 1/2/3.3 horsepower SCNM 2-speed motor on a large fan.



Three of six 15 horsepower ball bearing motors mounted vertical operating fans in a cooling tower on a building roof.



1/4 horsepower, 870/685 R. P. M., two-speed totally enclosed squirrel cage motor on a unit heater. Totally enclosed because the fan draws dust and dirt over the motor.

CENTURY ELECTRIC CO.

1806 Pine St. St. Louis, Missouri

Offices and stock points in principal cities.



THIS MAN IS BOOSTING HIS

Sales Percentage

More signed orders from your prospect cards—that's what every salesman is after. If you're selling automatic heat, you'll find that Salvo Selling is a formula that makes selling simple. It's based on the experience and methods of the most successful men in the business.

There's no trick to Salvo Selling. It's simply a way of producing concentrated impact on your prospect by tying your whole sales presentation up into one package, under one name. Just as a salvo from a battleship consists of several shells hitting the target at the same instant, the combined effect of all your

sales points can be piled up into a single, powerful appeal.

There isn't space available here to go into details and give all the reasons why Salvo Selling works, but we've

prepared a handy, pocket-size booklet that tells the whole story. A letter or post-card request will bring your free copy. Be sure to send for the free booklet which describes this selling method. You can read it in fifteen minutes. The suggestion it contains will help you to add consistently to your income. Perfex Corporation, 500 West Oklahoma Avenue, Milwaukee, Wisconsin.



IT TOOK COPPER TO TURN THE TRICK-

26,000 pounds of it



Reconstruction work in process on the skylight over the passenger concourse of the Windsor Station, Canadian Pacific Railway, Montreal, Quebec. This skylight is reported to be the largest in Canada. Sheet copper is being used for all bars, and sheet copper covering for heavy structural members that would otherwise be vulnerable to corrosion.

Completed job. 26,000 lbs. of cold rolled Anaconda Copper in 16, 18 and 24 ounce gauges were used in this construction. The job was executed by Eastern Steel Products Ltd., 1335 Delorimier Avenue, Montreal.



(Illustrations courtesy of Canadian Pacific Railway)



WHEN ARCHITECTS designed a replacement for this gigantic skylight, they had the benefit of a valuable object lesson. Rust had cast its shadow over the old structure, causing considerable glass breakage, leakage and weakness in vital parts. So, to insure against a repetition of this trouble, Anaconda Sheet Copper was specified for all exposed metal work.

Difficult conditions overcome with copper

Since skylight bars of copper cannot rust, they eliminate this common cause of glass breakage. Although

the initial cost of copper bars would be somewhat higher than rustable material, it is a worthwhile investment in view of the protection which non-rusting copper gives the glass. This is particularly important because of the high cost of the glass, and also because well constructed copper frames minimize the danger of falling glass caused by rusting framework. 4109

Anaconda Copper

THE AMERICAN BRASS COMPANY—General Offices:



Waterbury, Connecticut—Subsidiary of Anaconda Copper Mining Company—In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ontario

Make Wagner Motors Your SILENT Partner



A few of the MANY FEATURES:

- ✓ **Rolled Steel Frames** insure a compact, strong, rigid motor that will not get out of alignment.
- ✓ **Dynamically Balanced Rotors** mean freedom from vibration, thereby less noise results and longer life is insured to motor and parts.
- ✓ **Concentrically-Machined Endplates** insure a perfect centering of shaft and uniform air-gap.
- ✓ **Well-Insulated and Carefully-Treated Windings** assure long, trouble-free electrical performance of motor.
- ✓ **Diamond-Bored Bearings** ... A better surface and more accurate bearing alignment result.
- ✓ **Resilient Thrust Washers** cushion the free end-movement of the rotor and eliminate noise caused by end-play.
- ✓ **Skewed Rotors** reduce magnetic noise and eliminate variations in starting torque for different positions of the rotor.
- ✓ **Mechanically Compact Stators.** Stator laminations are tightly stacked and held together; all windings are braced and securely wedged in place.
- ✓ **Large Oil Wells** mean less frequent oiling.
- ✓ **Interchangeable Bases.** Mounting slots of the base are so spaced as to permit interchangeability of motors of the same frame size.
- ✓ **Thoroughly Tested Motors.** All completed motors and parts undergo careful and thorough tests in accordance with the highest electrical and commercial standards—your assurance that Wagner motors will give dependable, trouble-free and satisfactory service.

Their quiet operation and dependable performance on Stokers, Refrigerators and Air-Conditioning Equipment builds Customer Satisfaction . . .

The quiet, dependable, trouble-free performance of Wagner motors builds customer satisfaction and good will. Service calls not only annoy the customer but sometimes seriously reduce your profit on the installation. Take a tip from the many manufacturers of refrigeration and air-conditioning equipment who are now using Wagner motors. They have found from actual experience that Wagner motors give dependable service under all types of operating conditions.

You can select a Wagner motor that exactly fits the job because Wagner motors are built in a wide range of types and sizes with electrical and mechanical characteristics to fit the varying requirements of all types of air-conditioning equipment.

It will pay you to acquaint yourself with the complete line of Wagner motors.

TWENTY-FIVE BRANCH OFFICES AT YOUR SERVICE

Wagner maintains 25 sales and service branches conveniently located throughout the country. Trained sales-engineers are always ready to assist you in selecting the exact motor for your requirements. Each of the 25 Wagner branches carries a stock of motors ready for immediate shipment.



These BULLETINS WILL HELP YOU

You should have copies of Wagner bulletins MU-177 and MU-182. They contain motor information of value to everyone responsible for the installation of motors. Write for your free copies today.

MAIL COUPON TODAY

WAGNER ELECTRIC CORPORATION
6400 Plymouth Avenue
St. Louis, Missouri

M 41-14 A
AA

Gentlemen:

Please send me FREE bulletins MU177 and MU182.

Name

Firm

Address

City State

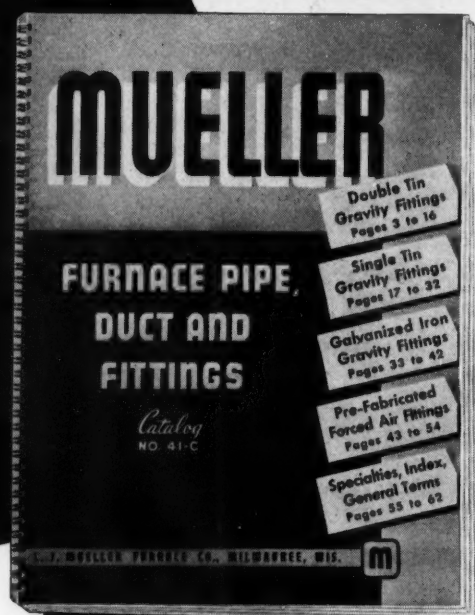
Wagner Electric Corporation

6400 Plymouth Avenue, Saint Louis, Mo., U.S.A.

MOTORS • TRANSFORMERS • FANS • BRAKES



Protect your Fall requirements
of furnace pipe and fittings
— by ordering now from
MUELLER'S
new complete catalog



It's time right now to figure your normal requirements for the heating season, and get them on order with your Mueller distributor.

It's an easy job with Mueller's new 64-page book — giving you under one cover everything you need in tin and galvanized gravity and forced air fittings, from one dependable source.

Double Tin Gravity Fittings — including new streamlined Mueller designs, to cut down air resistance and provide time-saving shortcuts for the installer.

Single Tin Gravity Fittings — with similar design improvements. These "made-up" fittings permit quicker assembly on the job.

New Line of Galvanized Iron Gravity Fittings—formerly made to meet specific building code requirements, now offered to all. Many items interchangeable with Mueller "Pre-Fab" forced air fittings, to cut down your investment in stock.

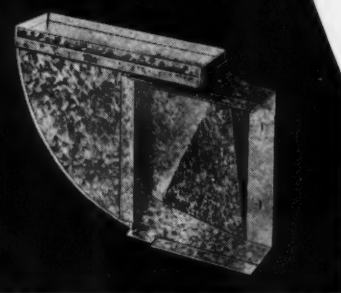
Pre-Fab Fittings — the well-known line including Mueller patented "Take-off" Fit-

tings . . . for easy, satisfactory forced-air duct systems that save you time, money, and headaches.

Specialties — including Mueller Air Moisteners, the Mueller Boost-Aire, etc.

With Mueller Pre-Fab Duct Systems, you get the savings of time and material, the certainty of a profit, the assurance of a satisfied customer. Mueller "E.L." (Equivalent Length) figures give you exact air resistances; proportioned air deliveries simplify final balancing.

Get set today for the coming season. Order from your Mueller distributor. Write for free copy of catalog shown above . . .
L. J. Mueller Furnace Company, 2010 W. Oklahoma Avenue, Milwaukee, Wisconsin.
D-16

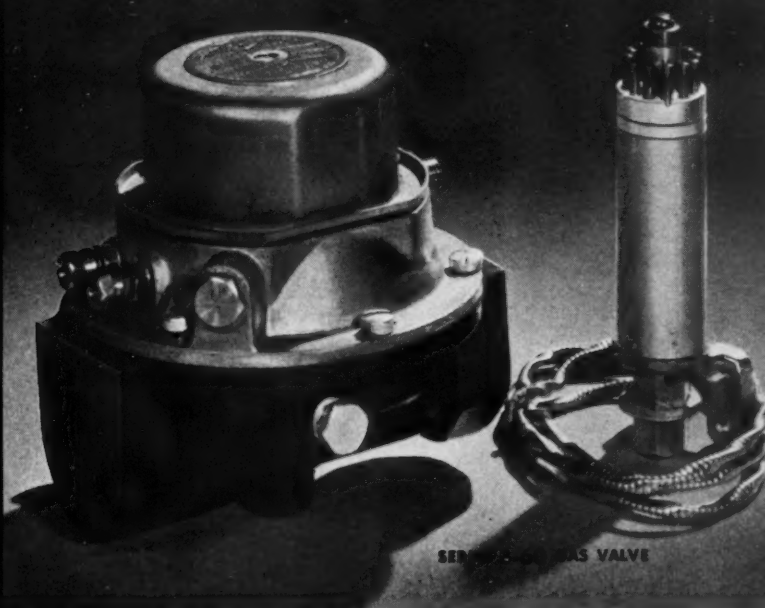


Save 2 inches at each side branch run — with Mueller's patented take-offs

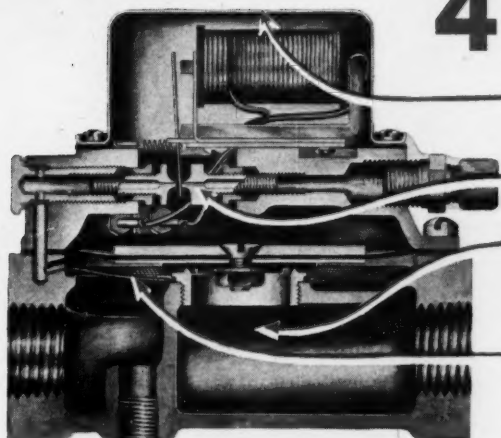
Wide openings into the branch lines, because of the patented take-off design, save 2 inches of trunk duct width at each take-off . . . saving 6", 10", 12" or more, in trunk line width at the plenum. Saves material, gives a better looking installation, keeps trunk line sizes to a minimum, often avoids use of costly "specials" that must be made to order. Fits within standard joist spaces.

MUELLER *Milwaukee* 
GRAVITY AND FORCED AIR FURNACE PIPE AND FITTINGS

...The valve
that has made
heating history
FOR 3 SOLID SEASONS
IS NOW
Better than ever



4 NEW OUTSTANDING FEATURES IMPROVE THE PROVED B-60 GAS VALVE



- 1. COMPACT, TAMPER-PROOF COVER**
Securely held...No external gas ways
- 2. INTEGRAL PILOT VALVE ASSEMBLY**
Accessible... Easily tightened... Rigid vent connection
- 3. NEW, STRONGER VALVE BODIES**
Hi-Tensile iron
Increased seating pressure...Maximum capacities
- 4. MAIN LINE STRAINER**

While the new B-60 Gas Valve is basically the same today as it was at the time of its introduction, these 4 big improvements now make it better than ever.

In addition, remember: NO OUTSIDE CURRENT IS REQUIRED,—the pilot generator ingeniously supplies all the necessary operating current. The valve is NOISELESS,—the generated current is direct, resulting in humless valve operation. ALL PARTS SEALED,—thus eliminating all possibility of dust or foreign matter from entering

sensitive mechanism. AUTOMATIC SHUT-OFF,—pilot light failure will automatically close main gas valve. IT'S TROUBLE FREE,—no wearing or sliding parts, no complicated or delicate mechanism to get out of order. NO BLEED GAS,—valve is either on or off and does not bleed.

General Controls B-60 Series Valves are available up to 1½" I.P.S. Use the tables at the left to give your customers the dependability of General Controls automatic gas heating.

B-60 VALVES FOR MFG'D. OR NATURAL GASES SCHEDULE A

Type	I.P.S.	Gas Cap.	Length Body	Catalog Number	List Price Valve Only
B-60-6	¾"	120	3 7/8"	12R1098	\$ 5.80
B-60-6	½"	150	3 7/8"	12R1099	6.40
B-60-1	½"	250	4 1/8"	12R881	8.40
B-60-1	¾"	360	4 1/8"	12R882	8.40
B-60-1	1"	795	5 1/4"	12R1006	12.60
B-60-1	1 1/4"	1025	5 1/2"	12R1007	16.80
B-60-1	1 1/2"	1185	5 3/4"	12R1008	18.80

*.5" Pressure drop .6 Sp. Gr. Gas.

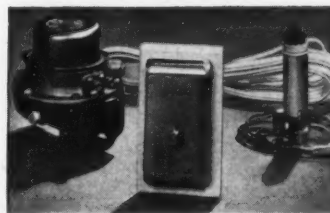
B-60 VALVES FOR LIQUEFIED PETROLEUM GASES SCHEDULE A

Type	I.P.S.	Gas Cap.	Length Body	Catalog Number	List Price Valve Only
B-60-6B	¾"	75	3 7/8"	12R1100	\$ 6.60
B-60-6B	½"	95	3 7/8"	12R1101	7.20
B-60-1B	½"	135	4 1/8"	12R1102	9.00
B-60-1B	¾"	170	4 1/8"	12R1103	9.00
B-60-1B	1"	500	5 1/4"	12R1104	13.20
B-60-1B	1 1/4"	640	5 1/2"	12R1105	17.40
B-60-1B	1 1/2"	740	5 3/4"	12R1106	19.40

*.5" Pressure drop 1.53 Sp. Gr. Gas.

Liquefied Petroleum Gases covers all types of domestic, Butane, Propane mixes.

NEW B-60 FURNISHED IN ALL-GAS PACKAGE SETS



Everything you need for safe, automatic gas heating installations. This is the T-85 Package Set. It includes the New B-60 Series Gas Valve, Pilot Generator, new Trimtherm and 30 feet of wire. Applicable to gas furnaces, floor furnaces, boilers, industrial applications, etc. One of America's most complete line of automatic gas heating package sets.

WRITE FOR YOUR COPY OF OUR NEW 12 PAGE
GAS HEATING BULLETIN TODAY



GENERAL CONTROLS

267 11th Ave., New York City • 687 Boylston Street,
Boston, Mass. • 4515 N. Broad St., Philadelphia, Pa.

421 Southwest Blvd., Kansas City, Missouri • 598 Peachtree N.E., Atlanta, Georgia • 1100 Cadiz Street, Dallas, Texas
28 North Live Oak Street, Houston, Texas • 913 Bryant Street, San Francisco, Calif. • 801 Allen Avenue, Glendale, Calif.

STOCKS IN ALL PRINCIPAL CITIES

Where trustworthy tools are vital



"They that go down to the sea in ships" know full well that Old Father Neptune can really put men and metal to the toughest tests. When the shoreline fades behind, come what may, a ship's crew is pretty much on its own. Tools play a prominent part in keeping things workable and ship-shape. And here, as on so many other jobs where trustworthy tools are vital, you'll find Crescent and Crestoloy Tools very much in evidence.

Crescent Tools include adjustable wrenches, pliers of all types, hacksaws, snips, screwdrivers, etc., etc. They are sold under the "Crescent" and "Crestoloy" trade names by hardware dealers and industrial distributors everywhere.

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.

**YOU CAN ALWAYS DEPEND ON
CRESCENT TOOLS**



NAME YOUR COPPER NEEDS !

*here are SEVEN
prompt answers*

PHILADELPHIA WAREHOUSE
1632 FAIRMOUNT AVENUE
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Telephone FREemont 5037

ST. LOUIS WAREHOUSE
1620 DELMAR BOULEVARD
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CINCINNATI WAREHOUSE
424 COMMERCIAL SQUARE
CINCINNATI, O.
Telephone MAIn 2833

NEW YORK WAREHOUSE
140 SIXTH AVENUE
NEW YORK, N. Y.
Telephone CAAnal 66326

CHICAGO WAREHOUSE
212 S. JEFFERSON STREET
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5318 ST. CLAIR STREET
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Telephone HEnderson 7695

SEVEN

COMPLETELY EQUIPPED
WAREHOUSES

SEVEN

PROMPT SOURCES
FOR

HUSSEY

COPPER and BRASS

PITTSBURGH WAREHOUSE & ROLLING MILLS

2850 SECOND AVENUE, PITTSBURGH, PA.

Telephone GRant 3650

Yes, name your copper needs—your Hussey Warehouse carries every copper item you use in stock ready to be rushed to you with time and money-saving speed. Since they can serve All your copper needs, why not standardize on Hussey Copper? Try

the convenience of ONE order—ONE billing—and ONE friendly dependable service. Choose the Hussey Warehouse nearest you and try this valuable convenience. You'll save time and money and have a dependable supply for every copper need.

C. G. HUSSEY & COMPANY

(Division of Copper Range Company)

ROLLING MILLS AND GENERAL OFFICES: PITTSBURGH, PA.

Warehouses in Principal Cities

**Give 'em dollars more in value
for a few cents more per sheet**



with

Beth-Cu-Loy Galvanized Steel Sheets

... And that's why more and more contractors are standardizing on Beth-Cu-Loy for all duct work. When you build with Copper-Bearing Beth-Cu-Loy, you can assure customers of double life for their ducts. Impartial tests by the American Society for Testing Materials have

repeatedly proved that steel sheets identical in analysis with Beth-Cu-Loy outlast ordinary sheets more than two to one. That's a real dollar-value you can give your customers for an added cost of only a few cents more per sheet. For lasting jobs, build with Beth-Cu-Loy.



BETHLEHEM STEEL COMPANY



WHY IS A JOBBER?
or

A Straight Line is the Shortest Distance, etc.

"A little learning is a dangerous thing," said Shakespeare or Abraham Lincoln, or who was it? And one of the most mistaken notions in marketing heating and air conditioning equipment is that the straightest line is from the furnace plant right to the heating contractor's shop.

If your shop were only a mile or so from our plant, that might be true. But you are located miles, maybe many miles away. The line would be straight all right but mighty long, and the time and trouble involved in getting just one unit to you would be all out of proportion to the size of the transaction.

But—not many miles, maybe not many blocks, from you is a Moncrief jobber. It's a straight line to his door and a very short one. He warehouses stocks and you can pick up your Moncrief on short notice, without much trouble, at low transportation cost, along with accessories and other things you may need at the same time.

It is no accident that the furnace and air conditioning jobber has become an increasingly important factor in the marketing situation during the past eight or ten years. There is one big reason, he better serves both dealer and manufacturer to their common advantage.

P. S.: There is a Moncrief jobber near you. We should like to put you in touch with him.

MONCRIEF STEEL FURNACES

"S" — "D-40" — "E"

*Steadily Gaining
in Popularity*

Whatever quality or feature you consider necessary and desirable in a steel furnace, you can be sure that Moncrief has incorporated it in one of the steel furnaces comprising the complete Moncrief line. Points of excellence are heavy gas-tight construction, large radiating surface, square casing, round casing, and fine appearance. Remember, too, that Moncrief can supply any type of furnace and winter air conditioner to burn any type of fuel.



Standard round
galvanized casing

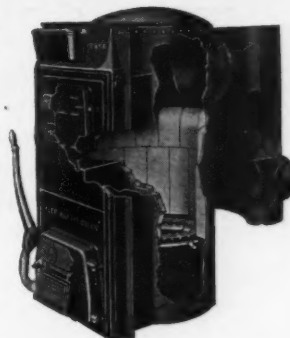


Square casing finished
in smooth green enamel

*Send for
literature.*

Superior Features of MONCRIEF Steel Construction

- ★Extra Heavy O. H. steel drums and radiators.
- ★Radiators extra large.
- ★Radiators are joined to heating drums with steel flanged collars electrically welded to each.
- ★Duplex Roller Bearing Grates.
- ★Casings finely finished.



Complete Line

CAST and STEEL FURNACES
WINTER AIR CONDITIONERS

THE HENRY FURNACE & FOUNDRY CO.

3473 E. 49th STREET, CLEVELAND, OHIO



There's no "or equivalent" with **DELCO** *Dynamically Balanced* **MOTORS**



Delco motors for oil burners, blowers, compressor units, stokers and ventilating fans offer many specific advantages that have no equivalent in other motors.

Exceptionally quiet performance is attained by Delco Products' accurate *dynamic-balancing* operation; by precision machining of shaft and bearing surfaces; by the generous use of materials in the frame; by the resilient base mounting, and by the Delco End-Play Take-up Device for V-belt drives.

Long life, too, is built into Delco

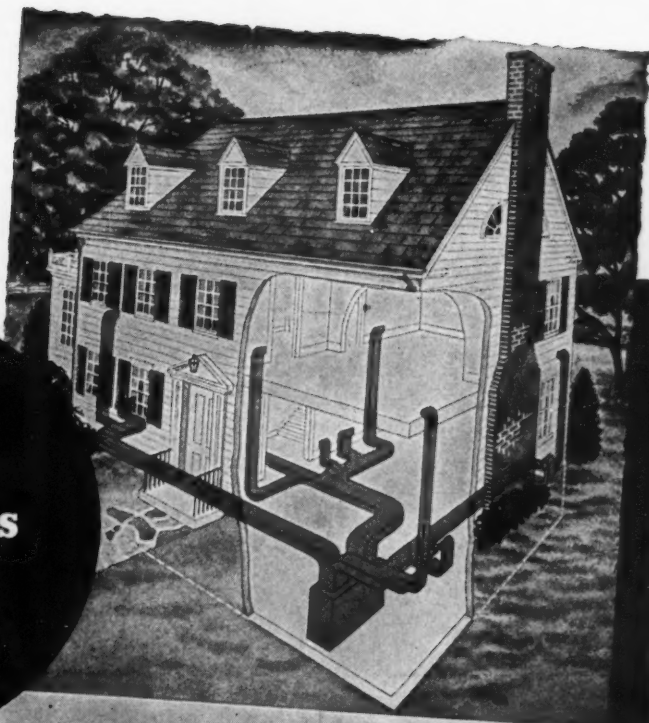
motors. Alignments are accurately maintained throughout production, and special care is taken to provide dependable insulation of motor windings. Delco motors are thoroughly protected against damage from overload and overheating by the Delco Thermotron, listed by underwriters.

By specifying Delco motors for heating and air-conditioning applications, you will assure your customers of quiet performance and long life. Consult the Delco Products Engineering Department for recommendations.

QUIET STARTING The Delco Centrifugal Switch provides quiet, snap-action starting—no fluttering when the motor goes into operation.

DELCO  **MOTORS**
 DIVISION OF GENERAL DAYTON, OHIO MOTORS CORPORATION

Many of
YOUR prospects
will read this...



THE popular magazine, *Better Homes & Gardens*, goes into more than two million homes. It likely is read by a good many people in your town. Those who are about to build will be attracted to this June advertisement about ARMCO Ingot Iron and PAINTGRIP. It tells them how they can make sure of "long-lasting service" for their duct systems, gutters and downspouts.

This gives you an opportunity to sell "quality work with quality iron"—to put in jobs that will satisfy you and please your customers. Thousands of contractors find it is good business to use ARMCO Ingot Iron—the metal with the longest actual service record of any low-cost iron or steel sheets.

When your customers see the familiar triangle trademark, they know you are giving them a durable job, a job that will save them time, trouble and money in the years ahead. And remember, for galvanized work to be painted, ARMCO PAINTGRIP is just the thing. Call the ARMCO Distributor, or write us. The American Rolling Mill Company, 1151 Curtis Street, Middletown, Ohio.

Will your new home get



"DUCTITIS"?

HIDDEN in the walls of many homes are sheet-metal air-ducts. These are thoroughfares of warmth in winter and cool comfort in summer. Outside the house are gutters and downspouts to carry away the rain and melted snow.

Early rust-failure ("Ductitis") in either of these vital systems may mean real trouble and expense. But, fortunately, you can choose a sheet metal for your home that has long been known for its lasting qualities.

There are air-ducts, gutters and downspouts made of ARMCO Ingot Iron that have been giving trustworthy service in thousands of homes for years. Their splendid records are further confirmed by the fact that in small-house issues of *The Architectural Forum* there have been more architects' specifications for ARMCO Ingot Iron than for all other trademarked iron or steel sheets.

For long-lasting service, have your architect or sheet metal man use ARMCO Galvanized Ingot Iron—regular or with PAINTGRIP finish for immediate painting and long paint life. The American Rolling Mill Company, 1151 Curtis Street, Middletown, Ohio.



ARMCO
INGOT IRON



of the New

SUNBEAM

MIDHAWK GAS-FIRED WINTER AIR CONDITIONER

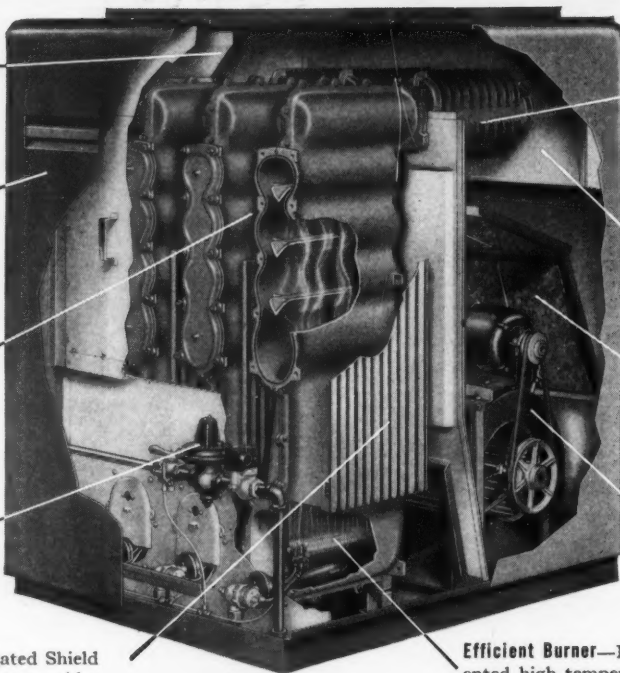
Cool Jacket—Inner lining keeps jacket cool and prevents heat loss.

Smartly Styled—Stream-lined jacket is made of durable steel, finished in beautiful Two-Tone Placid Blue with suede texture.

Rugged Heating Element—Made in two sections of cast iron. The faces of both sections are precision ground and packed with asbestos wicking to form a leak-proof joint.

Highest Quality Controls—The individual instruments of the several control combinations are noted for their quality.

Reduces Heat Loss—Corrugated Shield cuts heat loss into basement, provides extra heating surface.



Pre-Heated Air—Prior to entering the Heating compartment the return air from rooms is drawn over these hot radiators—increasing efficiency, saving fuel.

Draft Hood—Fits flush with jacket and is concealed in compartment in rear.

Effective Filters—Highly efficient—easily and inexpensively replaced.

Twin Blowers—On larger sizes. Both have a large capacity and are the double inlet type.

Efficient Burner—Made of cast iron with patented high temperature alloy, corrugated ribbons. Burns natural, manufactured, mixed or bottled gas uniformly and sparingly.

AMERICAN
HEATING EQUIPMENT
COSTS NO MORE THAN OTHERS

MEET the new Mohawk—youngest member of the famous **SUNBEAM** family—destined for quick success—built to bring you new sales, new profits! And for good reasons too. For this handsome, new Unit has a host of sales-winning features—provides completely automatic **GAS-FIRED** Winter Air Conditioning at *low cost* in small, medium or large homes—has nine sizes with capacities from 60,000 to 300,000 Btu input per hour.

The Mohawk has a beautiful Placid Two-Tone Blue Jacket of suede texture and a distinctive nameplate on all sizes. The fine appearance of the Mohawk is in perfect accord with the smartest basement appointments and decorations.

Write today for a copy of colorful new literature that tells the whole story of the new Mohawk **GAS-FIRED** Winter Air Conditioner—for facts about our special Summer Finance Plan and for the name of the **SUNBEAM** jobber nearest you.

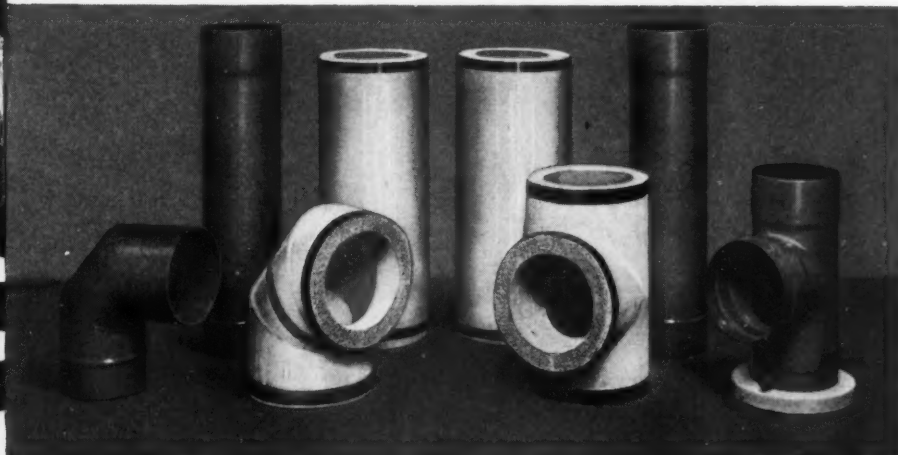
AMERICAN & **Standard**
RADIATOR & **Sanitary**

New York CORPORATION *Pittsburgh*

Copyright 1941. American Radiator & Standard Sanitary Corporation



A PRACTICAL VENTING SYSTEM



Showing Vitroliner with Fyrex insulation before assembly.



SPACE SAVING, UNIFORM, CONVENIENT FOR ANY CONSTRUCTION ARRANGEMENT

A practical venting system which has been in use for many years can now be used with insulation to eliminate the standard masonry chimney. It consists of lengths of acid resisting vitreous enamel coated steel pipe and fittings which are insulated with a high temperature prefabricated asbestos insulating wall one inch thick. This system of outlet and vent piping can be installed inside of partitions or walls (with 1" clearance from all combustible materials) and as such provide an adequate means for venting gas appliances as required in section 1105 of the Building Code. Recommended by the National Board of Fire Underwriters.

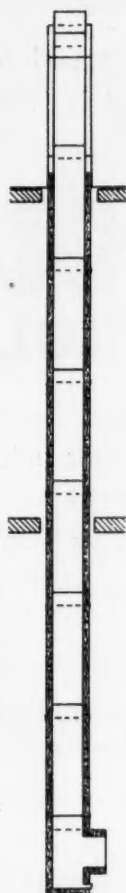
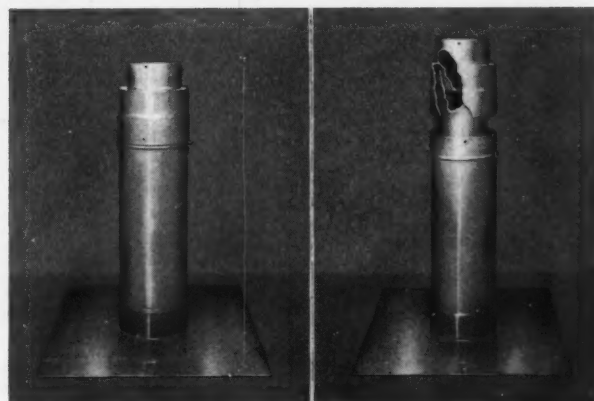


Diagram of Vitroliner outlet vent pipe for gas appliances

Approved by
Underwriters
Laboratories



PATENTS PENDING

New Double Pipe Roof Vents All Vitreous Enamel

VITROLINER PIPE—A heavy gauge, high quality, welded seam Armco metal coated inside and out with a special high temperature acid resisting vitreous enamel. The pipe is made in stock sizes from 3" to 10" in diameter of 6", 12", and 24" standard lengths; 22½°, 45°, and 90° elbows and open or closed tees with drain provision.

PIPE INSULATION—High temperature asbestos insulation—total thickness one inch. The outer surface is coated with refractory cement. The insulation is made up in cylindrical seamless tubes for all straight lengths. All fittings are split longitudinally. One inch metal bands are provided to hold the insulation in place. Insulation widely accepted in other fields for 30 years.



2515 ARCHER AVENUE

CONDENSATION
ENGINEERING
CORPORATION

CHICAGO, ILL.

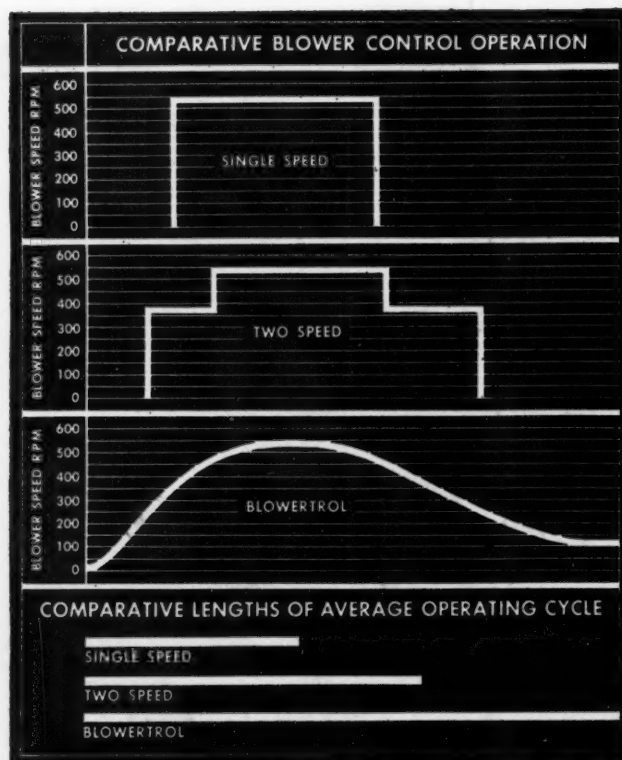
Ask our engineering department to help you solve any difficult and unusual venting problems.

PHONE CALUMET 4362

Here Starts a NEW Chapter on **COMFORT** in **FORCED AIR** **HEATING**

NOW you can assure your customers of **COMPLETE** comfort and more healthful heating — *automatically* — with modern Forced Air installations.

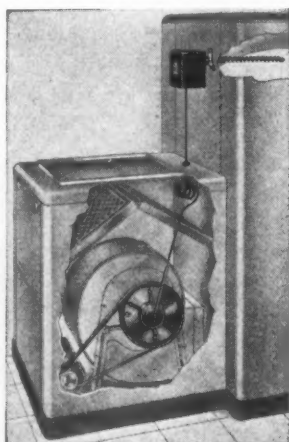
Now you can say "good-bye" to chilly blasts, to hot blasts, to air stratification with its "cold 70" and cold drafts, to "jumpy" room temperatures, to blower-starting noise, to excessive strain and wear on blower motor—in short, to all the owner dissatisfaction and service ex-



pense caused by intermittent "on and off" systems of blower control. All this is now made possible by the

MASTER BLOWERTROL *Thermostatic* **HYDRAULIC CONTROL**

HERE is a simple, inexpensive, dependable automatic method of regulating blower speed *gradually* in direct ratio to the bonnet temperature of furnace or heating unit. **BLOWERTROL** *gradually* increases and decreases the blower speed as the bonnet temperature rises and falls. Compare this quiet, steady, smoothly-graduated **BLOWERTROL** operation with that of the one-speed and two-speed methods of blower control as indicated on the chart above.



Moderate in cost and adaptable to any forced-air heating system using a centrifugal blower, regardless of fuel used. Can be fitted into old installations as well as new ones. **BLOWERTROL** makes any forced air heating system give better service and greater satisfaction.

WRITE for BULLETIN

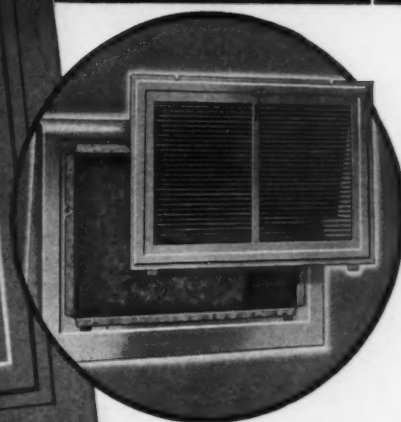
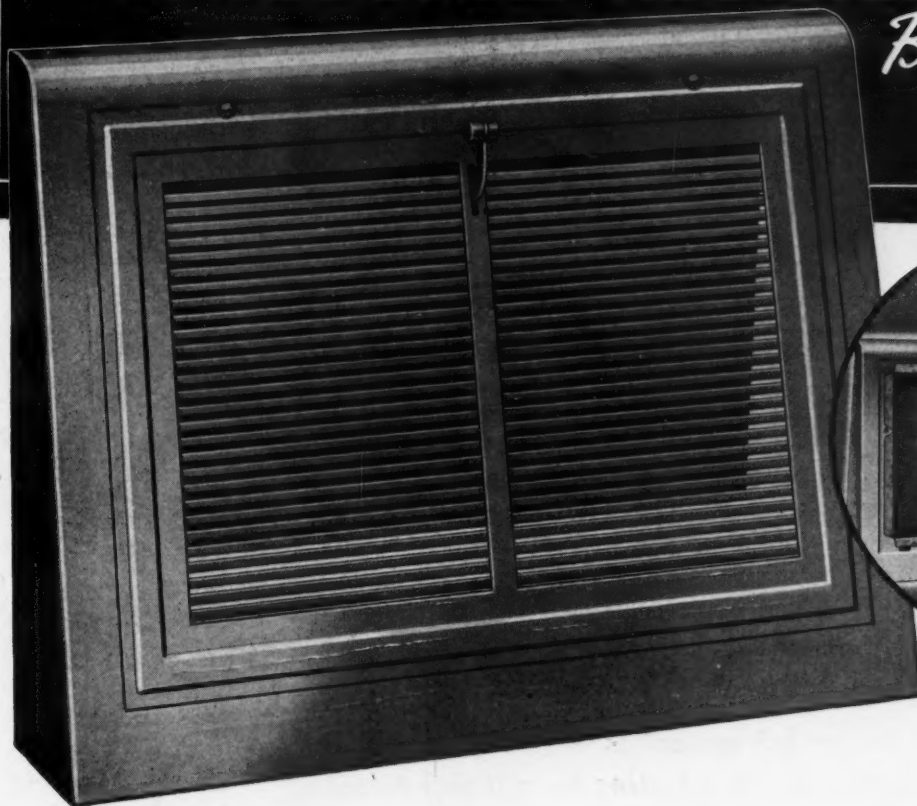
containing full information, details of construction and operation.

WHITE MANUFACTURING CO.

For over 25 years, *Pioneers in Gradual Control Heat Regulators*,
2360 UNIVERSITY AVENUE ST. PAUL, MINNESOTA

INDEPENDENT

BASEBOARD REGISTERS *with Bendable Fins*



Same design also available in standard one-piece construction in a complete line of sizes and finishes to meet any ordinary requirement.

No. 92—With Removable Grille

*Always Leading...
Always Progressing*



Styled by one of the foremost industrial designers, this register is a work of art as well as a model of high efficiency. Its simple artistic lines express streamline design at its best and harmonize with the furnishings of the modern home. Fins are regularly set to deflect air flow slightly upward; but being easily bendable, they can be adjusted to direct air flow straight outward or downward, as required. Scientific design affords large open area with minimum air resistance.

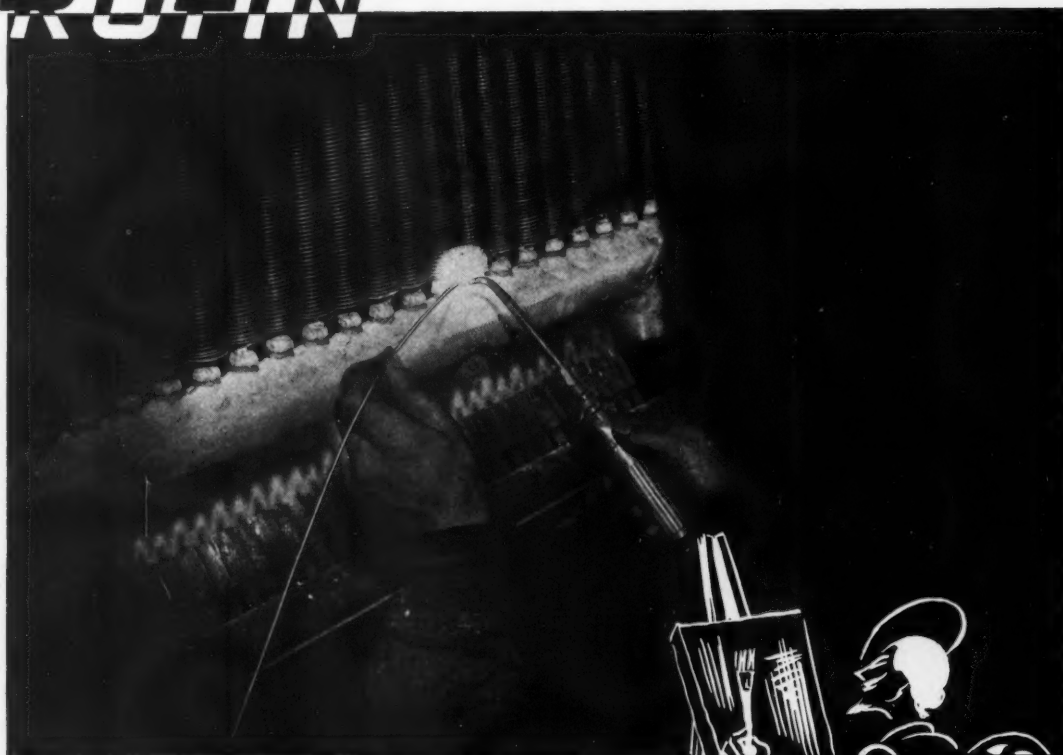
Send for Catalog 41-G

92A

THE INDEPENDENT REGISTER CO.

3747 EAST 93RD STREET, CLEVELAND, OHIO

AEROFIN



HE'S AN ARTIST...

★ He's an artist because welding aluminum tubing to aluminum headers for special AeroFin cooling coils requires an artistry resulting from years of experience and infinite patience. This delicate task was but one of many required to fill an order for all-aluminum AeroFin coils.

Every detail in the fabrication of these coils was anticipated by skilled artisans and engineers – to satisfy a customer.

★ If your heating and cooling needs demand standard coils, or if you require special materials and design, you can be sure that each and every coil has met the AeroFin test and is backed by a guarantee of completely satisfactory performance.

★ Where long life, durability, increased efficiency, instantaneous heat transfer are important factors – specify AeroFin Coils.



AEROFIN CORPORATION

410 S. GEDDES ST., SYRACUSE, N. Y.

CHICAGO • DETROIT • NEW YORK • PHILADELPHIA • DALLAS • CLEVELAND • TORONTO

SALES
RECORD

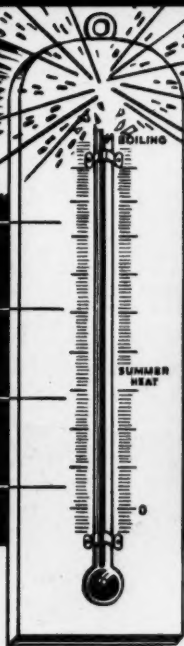
1941

1940

1939

1938

1937



"JANITROL WILL PUT THE HEAT UNDER YOUR SALES" *Says* TENBUSCH OF DETROIT

From a Cold Start in 1936 to a \$250,000
Quota in 1941—With JANITROL!

EVERY success story in the heating business must have two basic ingredients — management and equipment. This one had both.

The Detroit Gas Burner Company started in a rented store 4½ years ago and now owns and occupies a \$50,000 plant. It includes display rooms in which the trunk line installation is fully exposed for demonstration. Sheet metal fabrication shops and material storage were built for progressive assembly production.

Every job is carefully engineered. Builders say you can tell a Detroit Gas Burner Installation as far as you can see it. The examples illustrated prove that quality work really counts.

"But," says Mr. William J. Tenbusch, President of The Detroit Gas Burner Co., "it's the Janitrol line that puts the heat under sales. People have come to recognize and to demand Janitrol installations to such an extent that even 'price' builders get a sales lift from Janitrol."

What Tenbusch has done can be accomplished by hundreds of other heating contractors if they will do good work and if they select Janitrol Systems for their jobs.

Janitrol manufactures equipment and provides competent engineering service on gas-fired heating systems for the whole heating range from the small no-basement home to the largest homes and great factories. Janitrol units include hanging furnaces, forced air conditioners and gravity units in a wide range of sizes. Let us demonstrate the equipment that meets your needs.

SURFACE COMBUSTION CORPORATION, TOLEDO, OHIO

Offices and engineering service in principal cities



Mr. W. J. Tenbusch, Detroit Janitrol Dealer. The phenomenal success of this Janitrol dealer is best illustrated by his first business expansion 3 years ago and his \$50,000 plant of today. Both are shown below.



From a small rented store in 1936 to a \$50,000 plant in 1941. Interior of this new plant shown at right.

Sample of Janitrol installations from Mr. W. J. Tenbusch's album of success.



A typical small home Janitrol installation by the Detroit Gas Burner Co. is shown at left. Home exterior above.

Illustrated at left is a larger Detroit Gas Burner Co. Janitrol installation. Home exterior above.

JANITROL

WINTER AIR CONDITIONERS • CONVERSION BURNERS • UNIT HEATERS • GRAVITY FURNACES



**"Automatic comfort for only \$64—
you can't beat it," says owner of
this oil fired forced warm air job.**

**Perkins Bros. install Penn-built controls
for H. C. Sheller, Muncie, Indiana**

Modern and up-to-date in every respect describes the new five room bungalow occupied by the H. C. Sheller family, in the Maple Ridge Addition, Muncie, Indiana. And the most satisfying of all the modern conveniences in this new home is the oil fired, forced warm air heating plant installed by Perkins Bros., plumbing and heating contractors of that city.

"The house stays clean... the temperature never varies... and, I don't have a thing to do to keep it that way," said Mr. Sheller. "And, the best part of the story is the fuel bill—only \$64 for the entire 1940-41 heating season."

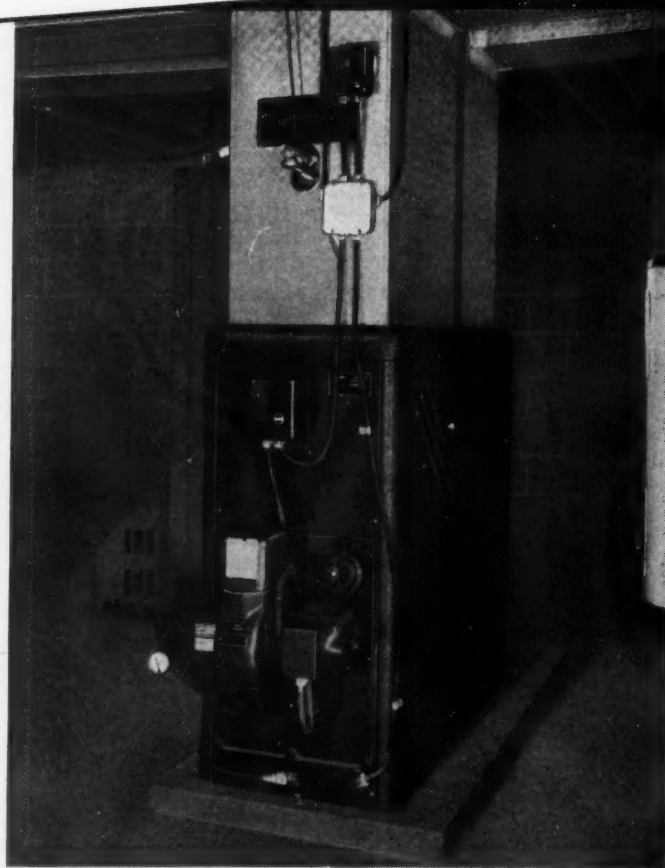
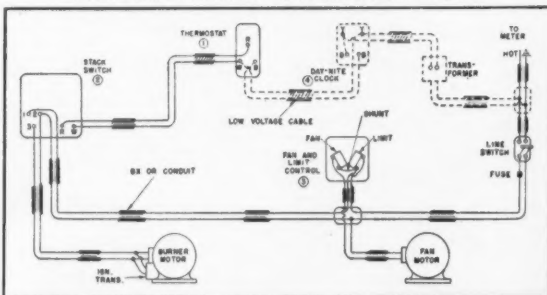
The unit which provides all of this customer satisfaction is an oil-designed furnace with a 75,000 b.t.u. rating at the bonnet. Accurate temperature regulation is provided by the heat anticipating Type 870 Penn-built thermostat, which operates the oil burner through the Type 670 stack safety combustion control, incorporating Penn-patented low voltage protection. A Type 515X01 combination fan and limit control, mounted in the plenum chamber, regulates fan operation by bonnet temperature and provides safety shut-down of the burner in the event of bonnet overheating from any cause. A pan type humidifier with float valve, provides humidification.

"It's installations like this that keep us in the heating business," said Walter Perkins, senior member of the Perkins Bros. firm. "A thoroughly satisfied customer makes our work pleasant, and profitable, too, because his friends are prospective customers and because his installation is not a source of service expense to us or to the customer."

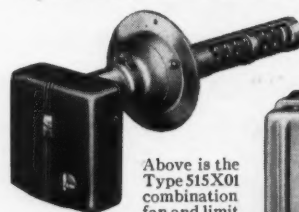
Get your catalog on Penn controls for all heating applications—any type of fuel and any type of heating plant. And service men can secure a FREE wiring and installation manual on Penn heating controls. Write for your copies today, specifying what types of fuel burning and heating equipment you handle.

Penn Electric Switch Co., Goshen, Indiana. In Canada: Powerlite Devices, Ltd., Penn Electric Switch Division, Toronto, Ont. Export: 100 Varick St., New York City. Branches, representatives and distributors in all principal cities.

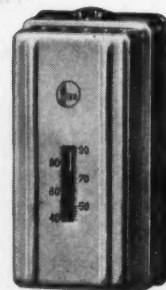
Below is the simple circuit employed on the H. C. Sheller forced warm air installation by Perkins Bros., Muncie, Ind.



Try these Penn Controls for forced warm air furnaces

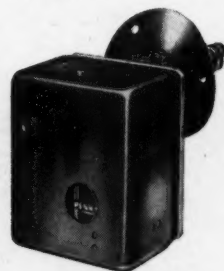


Above is the Type 515X01 combination fan and limit control for forced warm air heating systems. Incorporates completely enclosed Magnesium contact units. Easily adjusted.



Type 870A01C, at right, is a heat anticipating thermostat for positive control of room temperature. Attractive in appearance—maintains comfort at all times. Two-wire low voltage circuit.

Below is the Type 670 continuous ignition stack safety combustion control, with patented low voltage protection.



PENN

Penn-Built Controls for Many Applications

Thermostats, Bonnet Controls, Ductstats, Fire Protection Controls, Water Temperature Controls, Boiler Pressure Controls, Boiler Water Level Controls, Humidistats, Stack Switches, Stoker Timer Relays, Solenoid

Gas Valves, General Purpose Relays, Solenoid Refrigerant and Water Valves, Refrigeration Pressure and Temperature Controls, Water Valves, Pump Controls, Air Compressor Controls, Air Volume Controls, Line Starters.

**"Some thought I was crazy
to put all my eggs in one basket
but it's certainly paid me to . . .**



100% G-E DEALER Herbert Leswing of Jenkintown, Pa. He's the owner of Jenkintown & Glenside Electrical Construction Co. The oldest electrical concern in that section, they just celebrated their 24th anniversary! Back in '27 Mr. Leswing started with G-E appliances and then added heating, air conditioning and commercial refrigeration. He says there's never been a slow day in his place since. Read his reasons for "putting all his eggs in one basket."

**SEE THE G-E
YEAR 'ROUND
PROFIT SET-UP!**

**ON THE OTHER SIDE
USE THIS HANDY POST CARD**

TURN TO →



ONE SOURCE FOR EVERYTHING "In the first place we have one source of supply instead of a half dozen or so. We get to know all there is to know about what we sell, and how to install and service it. We visit G-E regularly and get first hand information, sales and technical training and demonstrations. We don't have to go to this factory and that factory and burn up a lot of time and energy keeping track of a lot of different companies' products. Our financing is all with G-E. We have fewer headaches and less bookkeeping.

G-E MEANS A LOT TO MOST EVERYBODY "Then—we concentrate on a name that means a great deal to everybody. We're not pushing a lot of brands. Just one—General Electric. We're known as the G-E people around here and are mighty proud of it! Pick up 'most any issue of our local papers and you'll see several of our ads. Cooperative advertising is just one of the many ways G-E supports its dealers with good selling material.

ONE G-E SALE LEADS TO ANOTHER "One G-E item sells another. That's where sticking to one complete line counts. Sell 'em one thing and they like it and buy another of the same brand. And they influence their friends to buy G-E too. It's like an endless chain.

WE SELL G-E ALL YEAR WITHOUT A LET-UP "Altogether there are eighteen of us on the job here. Four spend all their time selling. And with G-E it's all year selling. Something is always in season when you figure the extent and completeness of the G-E lines.

IT PAYS TO BE 100% G-E "General Electric works hard to help us sell. I think any dealer's crazy not to concentrate on one brand. Our long record of success proves it pays to be 100% G-E."

SEE OTHER SIDE . . . MAIL TODAY

NO POSTAGE REQUIRED

Postage
Will Be Paid
by
Addressee

No
Postage Stamp
Necessary
If Mailed in the
United States

BUSINESS REPLY CARD

First Class Permit No. 138, Sec. 510, P. L. & R.
Bloomfield, N. J.

GENERAL ELECTRIC CO.

5 LAWRENCE STREET

BLOOMFIELD, N. J.



**FOR AMBITIOUS DEALERS
WHO WANT TO MAKE MONEY**

"IT'S THE COMPLETE... YEAR-'ROUND PROFIT LINE"

MAIL FREE POST CARD
(BELOW) FOR FULL DETAILS



OIL BURNERS

OIL BURNERS

An attachment type burner. Priced on the nose with competition. Many exclusive features—1 to 3 gal. per hr.—141,000 to 423,000 Btu per hr. For steam, vapor, hot water and warm air systems. Owners report up to 25% fuel savings.

OIL FURNACES (BOILERS)

The one outstanding furnace on the market today. Owners report fuel savings of 25% to 50%. Domestic hot water coil optional. 7 sizes: 0.7 to 4.25 gal. per hr.—75,000 to 450,000 Btu per hr. For steam, vapor and hot water systems. Compact, easy to install. Competitively priced.



GAS FURNACES

GAS FURNACES (BOILERS)

Fast steaming at low cost. Gas pressure regulator, high steam transfer, complete combustion—for greater economy. A. G. A. approved. 9 sizes: 1.1 to 10.3 boiler hp.—39,000 to 345,000 Btu per hr. For steam, vapor and hot water systems.

WARM AIR FURNACES

Abundant heat (oil or gas fired) plus winter air conditioning—at no extra cost. Humidifies and filters, circulates heated air. OIL: 3 sizes, 0.95 to 1.90 gal. per hr.—100,000 to 200,000 Btu per hr. GAS: 14 sizes, 60,000 to 270,000 Btu per hr. Listed by Underwriters' Laboratory.



AIR CIRCULATORS

AIR CIRCULATORS

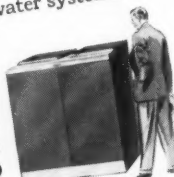
Complete, new and different line for 1941. 5 models: 20" to 48" fans, window and attic mounting—3500 to 16,000 cfm. All low cost, volume sales makers!

STORE COOLERS

Famous G-E "Packaged Weather." A wide market among homes, restaurants, stores, shops, hotels and hospitals. 6 sizes: 1½ to 10 hp.—19,740 to 113,400 Btu per hr. net cooling capacity. Available on small down payment with skip-payment plan.



OIL FURNACES



WARM AIR FURNACES

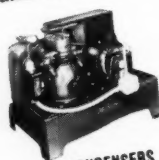


ROOM COOLERS

ROOM COOLERS

ROOM COOLERS

Completely self contained, compact, quiet and economical in operation. New models with exclusive, saleable features—priced to meet competition. Floor models: ½ and ¾ hp.—6,600 to 8,700 Btu per hr. Cools, circulates, ventilates, dehumidifies and cleans the air. Window sill model: ½ hp.—5,400 Btu per hr.



CONDENSERS

17 different models—53 specific sales features. Sealed condensing units in office models to reduce service losses. G-E has contributed more outstanding features to water cooler design than any other manufacturer. A profitable year-'round market.

CONDENSING UNITS

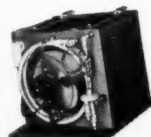
The famous G-E Scotch Giant Condensing Units are the "heart" of efficient cooling. 15 types—air cooled ¼ to 3 hp. 8 types—water cooled—½ to 3 hp. (There's a steady replacement market alone in these units.)



WATER COOLERS

CONDITIONED AIR COOLING UNITS

Only G-E has Conditioned Air Cooling Units. 8 types—wall and ceiling mounted—delivery capacities 1,400 to 12,000 Btu per hr. A big market in every business requiring food storage, reducing or eliminating food odor transfer and food shrinkage, correcting humidity.



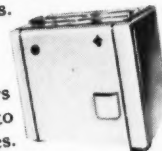
CONDITIONED AIR COOLERS



STORAGE CABINETS

STORAGE CABINETS

Self contained ready to plug-in and remote units—reach-in and walk-in G-E Commercial Storage Cabinets and G-E Dairy Merchandisers. Also—the G-E Ice Cube Maker—½ hp., 5 cu. ft. Here is another market that pays year 'round dividends.



BEVERAGE COOLERS

BEVERAGE COOLERS

A popular line of wet storage beverage coolers with strong sales features. Three models—½ to 1½ hp. Cooling capacity, 56 to 185—6 oz. bottles. Wherever bottled beverages are sold—a profitable market.

FOR YEAR 'ROUND PROFITS—MAIL TODAY

GENERAL ELECTRIC CO.
Div. 353, Bloomfield, N. J.

I want all details on the G-E Dealership
for my territory ☐ particularly on the items checked.

- | | | | |
|---------------------------------------|--|---|--|
| <input type="checkbox"/> OIL BURNERS | <input type="checkbox"/> WARM AIR FURNACES | <input type="checkbox"/> ROOM COOLERS | <input type="checkbox"/> CONDITIONED AIR COOLING UNITS |
| <input type="checkbox"/> OIL FURNACES | <input type="checkbox"/> AIR CIRCULATORS | <input type="checkbox"/> WATER COOLERS | <input type="checkbox"/> STORAGE CABINETS |
| <input type="checkbox"/> GAS FURNACES | <input type="checkbox"/> STORE COOLERS | <input type="checkbox"/> CONDENSING UNITS | <input type="checkbox"/> BEVERAGE COOLERS |

NAME _____

STREET _____

CITY _____ STATE _____

NO POSTAGE REQUIRED

PLUS

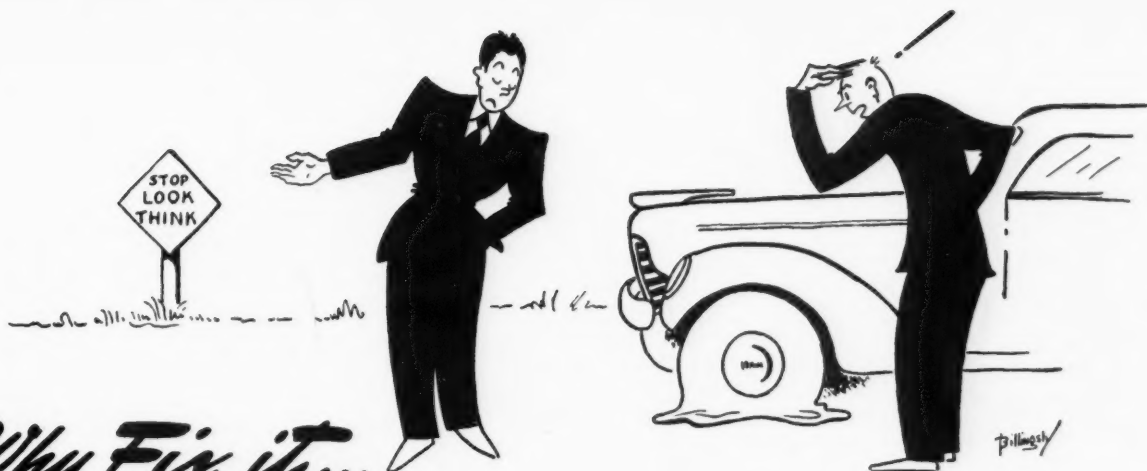
ORGANIZING • TRAINING • ADVERTISING • PROMOTION

If it helps you make sales—G-E's got it for you! National magazine, trade and specialty, cooperative local newspaper advertising—direct mail—literature—display—billboards—publicity—dealer and customer publications—stationery—business organization and assistance—sales manuals—application engineering, service and installation assistance.

FILL IN CARD—MAIL IN TODAY!

THE POST OFFICE WILL ACCEPT THIS CARD—NO POSTAGE NEEDED

GENERAL  ELECTRIC



Why Fix it... IT'S ONLY FLAT ON THE BOTTOM

● **RIDICULOUS**, isn't it? It costs money *not* to fix a "flat" whether it be a "flat" on your car or a "flat spot" on your stoker proposition. Hundreds of "flat" stoker propositions have been fixed by a change to Winkler. Sales have doubled every year. Don't fight the tide—go with it!

Compare salability of your stoker with Winkler:

1. **Can you prove by actual demonstration** that your present stoker is stronger, more durable and more economical than any other stoker? If you can't, then have our representative in your territory demonstrate the Winkler to you.

2. **Do you have important exclusive features** to sell—features such as Winkler's Fully Automatic Transmission with power to crush rock, split steel pipe—crush obstructions that might accidentally get in coal; Winkler's Eez-Air Control and Pneumatic Smoke-Back Eliminator that give greater cleanliness, fewer outfires, and greater burning efficiency? If you don't have important exclusive features to sell, then investigate Winkler.

3. **Do you have unsurpassed quality** to sell—at the right price? *Quality* that gives the comfort and economy of greater strength, durability, expert engineering, long life. You can prove by actual demonstration that Winkler gives these values.

Compare your Factory help with Winkler:

1. **Basic Business Set-Up:** Is your stoker business organized on a sound merchandising basis? Do you know what *four* factors in your basic business set-up are necessary for your success? If not, talk to the Winkler representative in your territory.

2. **Sales Facilities:** Has your stoker manufacturer helped you plan your *sales facilities* for successful merchandising? Winkler Distributors get this information and help—and they profit by it.

3. **Organized Sales Processes:** Modern stoker merchandising without organized Sales Processes is a gamble. Do you have this fundamental information? If not, talk to the Winkler representative in your territory.

4. **Business Exposure:** What program do you have? Winkler Distributors have a *Business Exposure Program* that can't be duplicated because it's built on exclusive Winkler features. It means money to Winkler Distributors. Our representative will be glad to explain it to you.

There is more to successful stoker merchandising than a cooperative advertising plan. Remake your stoker proposition now with Winkler, a real leader. Investigate the **WINKLER** Direct From Factory Franchise today!

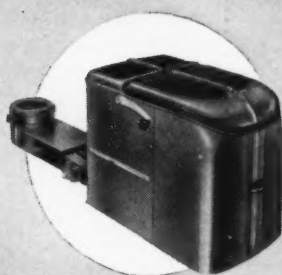
U. S. MACHINE CORPORATION

500 WEST MAIN STREET • LEBANON, INDIANA



WINKLER *Stokers*

45 MODELS AND SIZES
HOPPER AND BINFEED TYPES

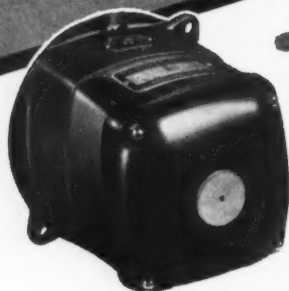
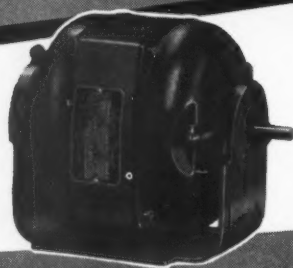


A REALLY COMPLETE LINE
FOR DOMESTIC AND COMMERCIAL NEEDS





sh-h-h-h
LELAND MOTORS AT WORK!



● You need good ears to hear a Leland motor from a distance of only five feet. For Leland motors are precision-built . . . giving you the degree of quietness so essential for modern fans, blowers, unit heaters, and water circulators.

● You should know that our bearings are diamond bored . . . in fact, we were the first to do so. Clearances on rotating parts are kept to the unusual accuracy of .0001". Among the rigid inspections is the test for quietness, conducted in a special sound-proof room . . . and woe to the motor that utters the slightest peep.

● There's much more to the Leland story, of course . . . dependability so great that few motors ever require factory service . . . special designs created to do the job at hand and no other . . . an attractive square frame design that impresses prospects . . . extra features of importance such as the Leland thermomatic protector.

● In short, Leland motors are built . . . built to give your products those necessary motor extras. If you will write us, we will place a Leland motor in your hands for verification of our statements. **THE LELAND ELECTRIC COMPANY, DAYTON, OHIO.**

Leland Motors

**● FOR ALL TYPES OF HEATING
AND VENTILATING EQUIPMENT**



A Swell Quiz with A Swell Answer

How Many Homes Will Be Built In the United States in 1941?

ANSWER: According to forecasts in "Architectural Forum" for January, indications were for over 625,000 new single-family dwellings to be built this year at a cost of **ALMOST TWO BILLION DOLLARS!**

That's a lot of **NEW** homes—some of which will be built in **YOUR** community. All of them will be heated—many will be air-conditioned. And the dealers with the **BEST** lines with the **BEST** reputations and the **BEST** ability to meet all requirements are capturing the "lion's share" of this new house business—to say nothing of the vast replacement market of highly profitable business.

That's a round-about way of describing the fortunate position of **WEIR-MEYER** dealers—because they do have a line that is up-to-the-minute and complete for every type of job—gravity or forced-air—for coal, oil or gas—both competitively-priced and **QUALITY** merchandise.

Summed up, here is the **WEIR-MEYER** dealer set-up:

- (1) Reputable Products—made by pioneers who are still leaders in the industry.
- (2) Specially-engineered units for Coal, Oil and Gas.
- (3) Different types that appeal to the "Classes" as well as the "Masses." Just a few "samples" shown here!
- (4) Protected **EXCLUSIVE** territory.
- (5) Adequate helps: Effective sales literature; Experienced Engineering; simple, non-recourse financing.

Does the above sound like the kind of a proposition **YOU** would like to know more about? We'll be glad to give you full details and to answer **ALL** your questions if you will either sign or clip the coupon to your letterhead. But we feel we should warn you on one point: **WEIR-MEYER** dealers "stay put"—they don't "switch around" much—if **YOU** "join up" with us, it **MIGHT** be "for life"!

THE MEYER FURNACE COMPANY
PEORIA, ILLINOIS

Manufacturers of **WEIR** and **MEYER**
Steel Furnaces and Air Conditioning
Equipment Since 1866.

The Meyer Furnace Company:
Peoria, Ill.
Please send all dealer details.

The Answer

TO ALL YOUR SALES PROBLEMS

DAVY Bin-Fed STOKER



HERE IS THE OPPORTUNITY TO
DOUBLE YOUR SALES!

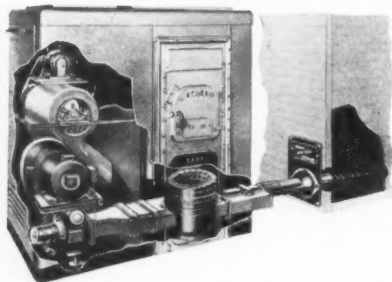
A BIN-FED OF PROVEN QUALITY

May be installed in any type furnace or boiler as easily as any side installation of a hopper stoker. The Davy Bin-Fed Stoker sells at a price comparable to any good hopper type stoker. Why sell your customers something they don't want, when you can give them just what they want (automatic heat) with a Davy Bin-Fed Stoker, at a price to fit their pocket-book.



A
MESSAGE
TO
ALL
DEALERS

COMPLETE UNIT! DAVY Bin-Fed STOKER-FIRED AIR CONDITIONER



The greatest achievement in coal history! For new homes or old homes . . . when a complete heating unit is wanted sell them a Davy Bin-Fed Stoker-Fired Airconditioner.

No other as reasonably priced, compact unit on the market. The first cost is less than complete oil units, and compares favorably with a good gas unit.

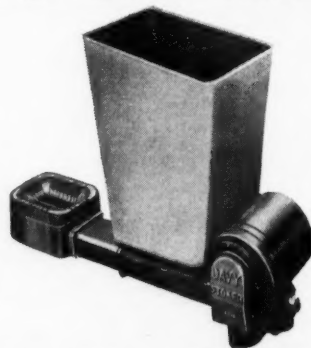
If you have a showroom inquire about our floor plan, whereby you can display our complete line of Bin-Fed Stokers of 20 to 100 lbs. per hour. Also our New Airconditioning Unit. No cash outlay needed!

Are you familiar with the revolutionary development of the low cost Davy Bin-Fed Stoker? A bin-fed stoker that successfully burns high or low volatile coal! Also the Davy patented Air-Cool Oscillating Agitator that actually works, allowing you to burn a coking coal!

Prepare yourself for the sales you are losing in Bin-Fed stokers! No other bin-fed stoker comparable in construction or price. Investigate our dealer set-up and see the profits you are missing by not being on the Davy Bandwagon! Write for full particulars covering our complete line of Bin-Fed stokers and Stoker-Fired Airconditioning Units.

NEW ADDITION TO OUR LINE DAVY COMMERCIAL HOPPER STOKER

Created by popular demand from our dealers! 100 lb. per hour hopper type stoker for use on small commercial plants. Contains these features: All cast iron and steel construction. Assembly so designed that any desired distance from boiler may be had to facilitate removal of clinkers. 12 gauge, steel "Copper Bearing" hopper that can be tilted right or left. All these features at our popular low price!



DAVY STOKER DIVISION

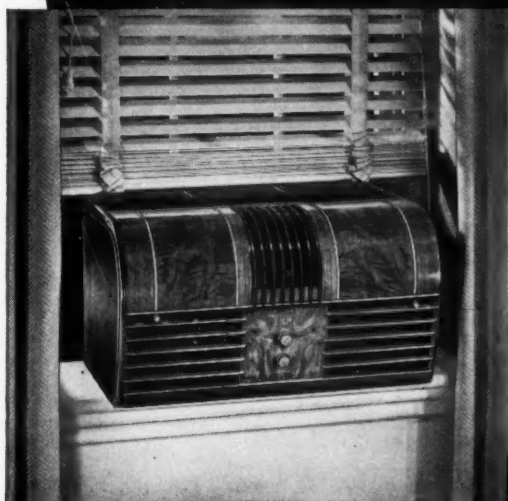
DAVY FUEL & SUPPLY CO.

14460 DEXTER BLVD.

DETROIT, MICHIGAN

Get Your Share of This BIG-PROFIT RETAIL BUSINESS!

- ✓ Tremendous Sales
- ✓ High Unit of Sale
- ✓ No Saturation
- ✓ No Trade-Ins
- ✓ Big Dollar Profit



**Everyone Can Afford This Real,
Full-fledged Air Conditioning!**

Model 76-A (Illustrated)

- Cools and Conditions Room Air.
- Dehumidifies. Moisture is wrung out of the air, leaving it cool, dry, stimulating.
- Draws in Fresh, Outside Air.
- Filters Out Dirt, Dust and Pollen. A boon to hay fever sufferers!
- Circulates the Air.
- Shuts Out Street Noises.
- Removes Stale, Stuffy Inside Air.
- Gives Pure Air All Year 'Round.

There's a Philco-York Air Conditioner for Every Size Room, priced as low as . . .

\$129⁵⁰

Start right now to ring up fast, quick sales in this brand new, retail business . . . Single-Unit Air Conditioning! It's growing faster, building more profits every day! Easy-to-handle package merchandise . . . quickly installed . . . no plumbing or wiring. Free of technical problems. And no saturation, no trade-ins . . . FULL PROFITS!

PHILCO-YORK SINGLE-UNIT AIR CONDITIONERS

Team up *now* with Philco-York, the world's *biggest-selling* Single-Unit Air Conditioner! In 1940, nearly ONE-HALF of *all* the portable Air Conditioners sold were Philco-York Units. And now, in 1941, Philco and York bring you an even more saleable line. New improvements, greater efficiency, new beauty . . . at prices well below the average of the industry.

And just think of your market! Every home and office . . . hotels . . . hospitals . . . tourist courts . . . all are *your* potential customers! What's more, hundreds of leads are rolling in each week from Philco's vast direct mail and magazine campaign . . . they'll be passed on to you. Tailor-made prospects . . . *easy sales!*

In addition, Philco offers you spectacular dealer helps for use in your store. Colorful literature, banners, streamers . . . electric signs . . . beautiful window displays! Don't wait a minute . . . you can't afford to miss out on this fast-growing, big-profit business. See your Philco distributor or mail coupon now!

Mail Coupon NOW!

PHILCO, Air Conditioning Dept. 572
Tioga and C Streets, Philadelphia, Pa.

Please send me full details of your dealer franchise proposition on Philco-York Air Conditioners, together with Discounts and Special Wholesale Credit Terms. Also send big, new Illustrated Booklet.

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MR. HENRY M. JODA,
Chicago, Ill., a tinner
for 25 years, passes
on some good advice.

**"I am ... a specialist. 90% of my work calls
for Republic ENDURO Stainless Steel"**

Reading Time 90 seconds (and well worth your time)

"It was tough to keep the business going until someone tipped me off several years ago that Republic ENDURO* Stainless Steel was the coming metal and suggested that it might open up a profitable field for me.

"No sounder advice will come my way in this lifetime. Today, I have a good business . . . and I am making money.

"I am what is known in sheet metal circles as a specialist. This simply means that my operations are concentrated in one field—stainless steel dispensing equipment. Today, 90% of my business calls for Republic ENDURO Stainless Steel.

"But, let me emphasize that the field of usefulness for stainless steel is by no means limited. It has been barely touched and the use of this metal will continue to grow and grow, especially in building construction and for plant equipment. Believe me, there are unlimited opportunities and plenty of places where the progressive tinner can get a foothold.

"From my own experience, these are the reasons why a tinner should use Republic ENDURO:

1. Many buyers already know about the metal.
2. Once used, Republic ENDURO sells itself.
3. No headaches in working it despite what you think or what you may have heard years ago when stainless was new.
4. It gets you away from strictly price competition.
5. Many jobs come to you when you become known as a "stainless" man.

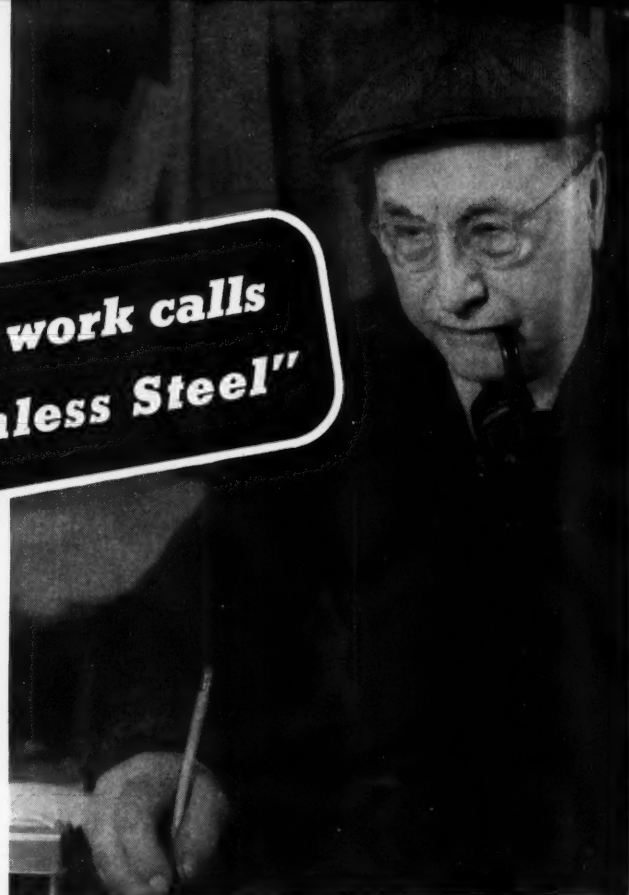
"Right now is the best time in the world to hop on the band wagon and here is a practical suggestion on how to get started. The next time you are talking to a customer, ask him why he doesn't consider Republic ENDURO for some of his work, mentioning its long life, its freedom from corrosion, its beauty, its ease of cleaning. Customers who want the best will listen to you and soon you will discover in your business as I did in mine the truth in that old adage . . . 'mighty oaks (and profits) from little acorns grow.'"

REPUBLIC STEEL CORPORATION

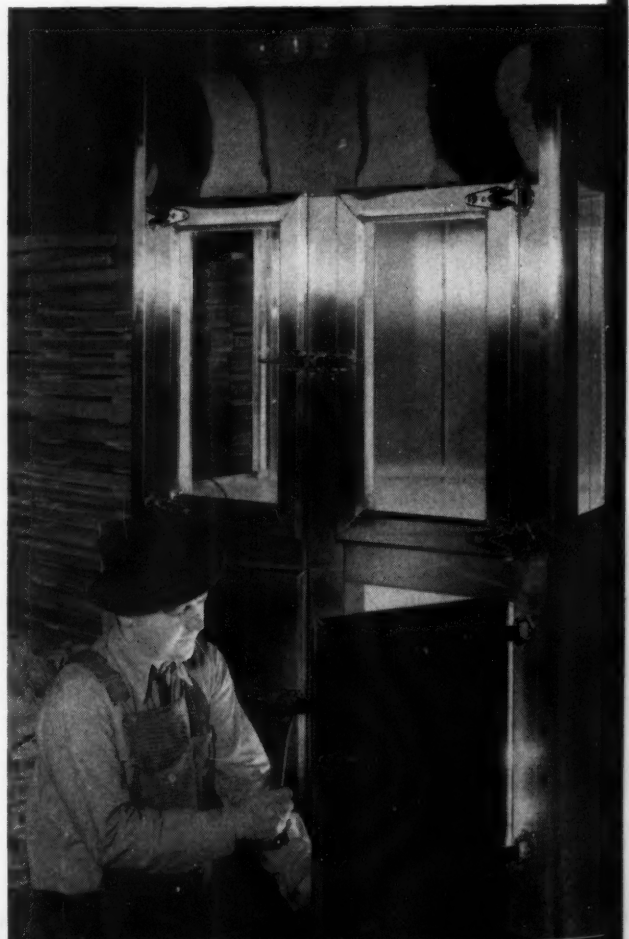
General Offices: Cleveland, Ohio

Berger Manufacturing Division • Culvert Division • Niles Steel Products Division
Steel and Tubes Division • Union Drawn Steel Division • Truscon Steel Company

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Many of your customers will pay you a higher price with a better profit margin for ENDURO in items formerly made of other sheet material. Several booklets filled with suggestions together with a book entirely devoted to fabricating information will be mailed upon request.



REPUBLIC *Enduro* STAINLESS STEEL

SHEETS—STRIP—PLATES—BARS—RODS—WIRE—TUBING—BOLTS—NUTS—RIVETS



Title 1 FHA Needs Renewal

renewal of FHA's Title I which, if not renewed, expires July 1.

Title I, as most readers know, is the provision of the National Housing Act which authorizes the Federal Housing Administration to insure lending institutions against loss on modernizing loans.

Congressman Steagall, Chairman of the House of Representatives Banking and Currency Committee has already introduced legislation to extend the expiring provisions and titles of the National Housing Act. Everyone interested in having this remodeling title continued should write their congressman to vote for the Steagall Bill.

It will be dangerous to do nothing about this bill in the belief that Title I is now so firmly entrenched that Congress will renew all provisions automatically. As a matter of fact, this is far from true because certain lending organizations feel that FHA should abandon Title I because Title I has served its purpose.

We do not believe that such is the case. We know some persons who claim that these same lending agencies would like to see Title I dropped in order that the lending institution can charge higher rates for small remodeling and modernizing loans.

And we do not believe that Title I has served its full usefulness, or that all modernization has been done. Quite the contrary, our feeling is that many families enjoying increased income or steady employment will now do the same modernizing their more fortunate neighbors did several years ago. We do not believe that people will now sell or leave the old house and build a new one just because they have a better income.

Recently Mr. Abner Ferguson, FHA Administrator, urged the Banking and Currency Committee of the House to renew the expiring provisions for three years. He also recommended increasing the maximum present modernization loan of \$2,500 to \$5,000 plus the extension of the repay-

ment period from the present three years to five years on loans over \$750.

Both these recommendations seem advantageous to our industry. The purchaser of a winter air conditioning system would, under these extensions, be able to buy his heating plant plus other improvements and pay over a period of five years, whereas now with a lower maximum and a three year payment period he usually buys one major improvement at a time.

If Title I of FHA has been instrumental in aiding you to obtain sales of modern equipment, you should be in favor of renewal of this act. To express your opinion seems plain common sense.

1940 Census of Housing

During 1940, the Bureau of Census did the field work for the nation's first Census of Housing. On the schedule the enumerators filled out concerning each dwelling were 31 questions of which about 20 questions were applicable to the average dwelling unit.

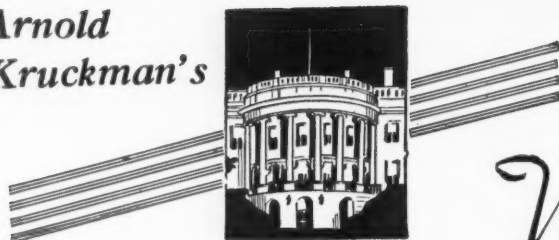
There were three questions on the schedule of special interest to the home heating equipment and fuel industries. These three questions covered the type of heating equipment, the kind of fuel used for heating and the kind of fuel used for cooking.

Right now the returns from the census are being tabulated. Statistics were obtained on heating equipment and fuel for every occupied dwelling unit in the United States. This 1940 census is, then, not like the Real Property Inventory in which a small actual census was projected to cover the country.

Statistics on heating equipment and fuel will be published in the Second Series Housing Bulletins. These bulletins will be issued separately, by states, as quickly as each state's census is tabulated. Finally, the complete state bulletins will be assembled into bound volumes of the regular census type.

The statistics on equipment will show whether the heating plant is: steam or hot water; piped

(Continued on page 122)



Washington Letter

Priorities

IN THE fine print part of the Reorganization Law there is a casual authority permitting the President to create an Office for Emergency Management. Few paid much attention to it when the bill was under discussion and those who did wrinkled their brows and wondered what *that* was there for. They found out in January. Mr. Roosevelt took a page out of the practices of corporation lawyers and made the OEM the holding company for all Defense organizations. It became the capstone on the complex defense structure and was given all fiscal powers and general administrative powers of the internal management of the Defense machine. It had its direct and intimate liaison with the President.

Thus, through another Executive Order, the intimate supervision was extended over the other agencies when the Office of Production Management, (Knudsen-Hillman), became an agency of the OEM. The same order specified that the OPM should have Divisions of Production, Purchase and Priorities. The Order also distinctly emphasized that all heads of these Divisions must be appointed with the approval of the President. All this is detailed here because you cannot understand what happens in Washington unless you grasp these arrangements. Always bear in mind that existing organizations are almost never abolished—new ones are set over them when they do not seem to work.

Priorities Setup

The new Division of Priorities was endowed with powers under a war emergency law, Public 671. The priorities appeared to be covered in Section 2-A. E. R. Stettinius, Jr., took the job of Director of Priorities, part of OPM of which Knudsen-Hillman are the heads.

The job of making Priorities work patently is ticklish. Errors jolt the whole national economy and disturb the rest of the world. Mr. Stettinius, only vaguely known in Washington, generally was accepted as the man who could do the job and proceeded to put his organization together. It consists of two assistant directors, a division consultant, five group chairmen, some 500 other experts and officials and, roughly, 1500 sub-officials,

technicians, clerks, stenographers and typists.

Priority Confusion

In the earlier months of this year it became perceptible that there were difficulties in the Priorities Division arising from the inherent lack of authority. The program gave Stettinius control over raw materials and production; Leon Henderson became the czar of prices; Donald Nelson over procurement; The Army-Navy Joint Board over all military business; Federal Power Commission over electrical energy; Interstate Commerce Commission over transportation; U. S. Maritime Commission over shipping; Bituminous Coal Commission over soft coal fuel.

Some agencies had statutory powers, others had powers bestowed by Presidential Executive Order. In some cases the powers were questioned, in others they frequently overlapped. Messrs. Knudsen and Hillman told Congress in a formal statement that the authority of the Priorities Division was sometimes wholly questionable and that its mandatory orders might be ignored and that it might be embarrassing to the whole discipline of maintaining obedience to Priority orders if any industrial corporation should successfully attack the lawfulness of the Priorities regulations.

White House Holds Power

All this happened recently while Mr. Roosevelt was sick. Some of the less devoted New Dealers in Congress, not satisfied with the increasing concentration of power at the White House, passed, in the House, an Act legitimatizing Priorities enforcement; making liquidated damages for non-performance on other Government contracts void if the contracts interfered with Defense contracts; placing lend-lease transaction under the Priorities Division; extending priority regulations over subcontractors and sub-subcontractors; giving wide powers of investigation in connection with priority problems; and creating the permanent job of Director of Priorities at \$12,000 a year.

In essence the new law would focus very large powers in the Director of Priorities. When the news reached the Administration crowd they upset

the action in the Senate. They passed an act legitimatizing doubtful phases, giving plenty of teeth to the new authority, retaining for the Army and Navy their present dominance and retaining chief authority at the White House. If the House accepts these changes, which is more than likely, the essential situation will not have changed very much.

Military Comes First

The military domination is the milk in the coconut. It is smoothly covered by courtesies and evasions, but it is there. You will be told the Director of Priorities is in control of all priority machinery. Actually, in effect, the Army and Navy function independently. The Priorities Division has assigned to the Army-Navy, all ratings ranging from A-1 to A-10 and these ratings are used to designate preferred supplies of 245 materials or products enumerated on the Priorities Critical List. They call these "automatic" ratings, meaning the military may issue certificates of ratings without reference to the Director of Priorities. These ratings also apply to the needs of U. S. Maritime Commission, Coast and Geodetic Survey, the Coast Guard, the National Advisory Council for Aeronautics, and to lend-lease purchases for Britain, Canada and other countries. Under this rating the Procurement Division of the Treasury purchased for Great Britain 1,000,000 tons steel to be delivered during June, July, August and September.

The significance of the military preferences also is reflected in a recent statement that 80% of the firms listed by the Army-Navy Munitions Board during the years the military were planning mobilization have already received defense orders. If you have handy a copy of the Mobilization Plan, issued as a Senate Document some years ago under Sen. McCarran's sponsorship, you will find that military needs come FIRST now. The whole system of priorities logically is a part of the Mobilization Plan. All other needs must be subordinate. The Priorities literature makes clear that the military have the right to commandeer materials and services, in an emergency.

Now what are priorities? Literally the things that come first. What comes first? In this case a priority
(Continued on page 118)

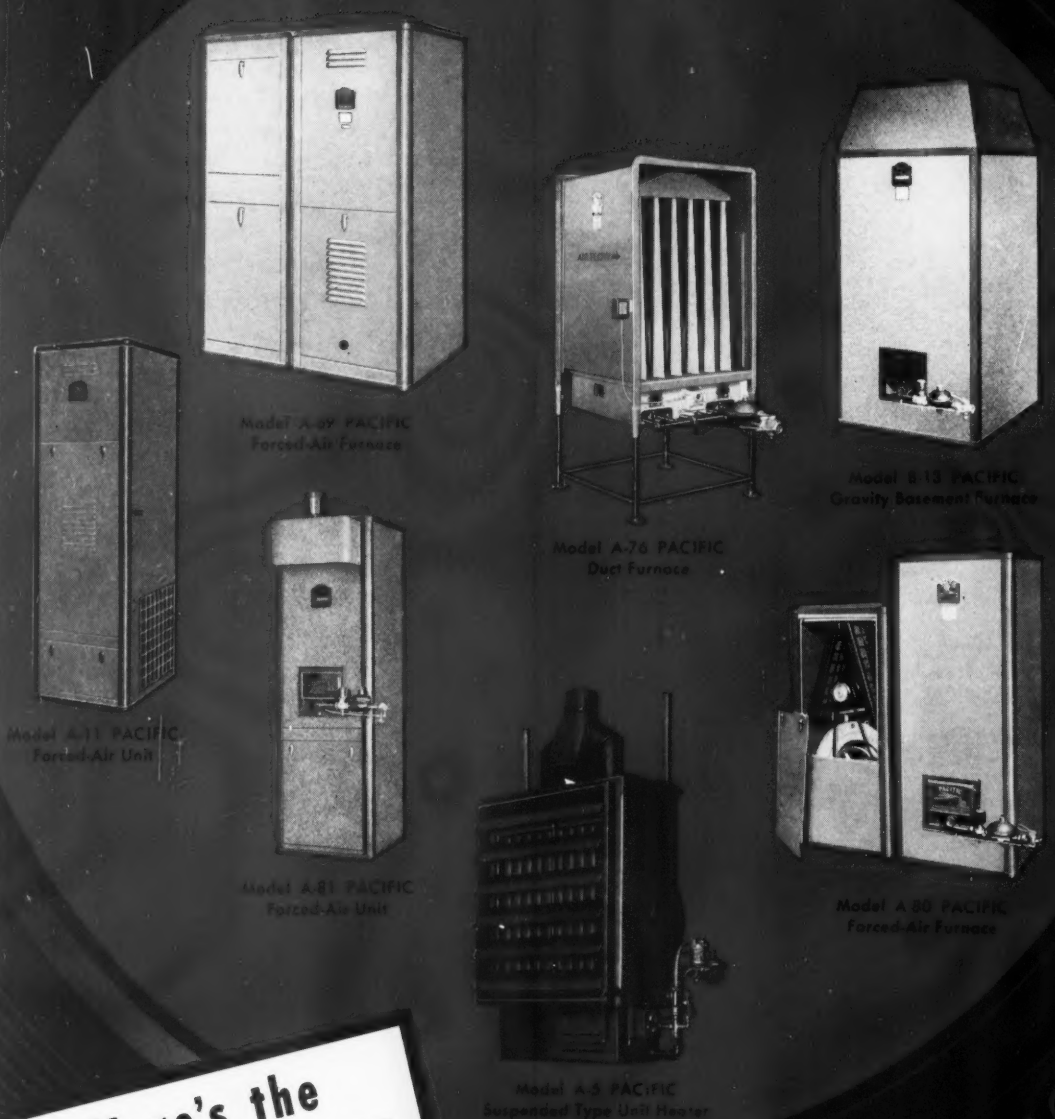
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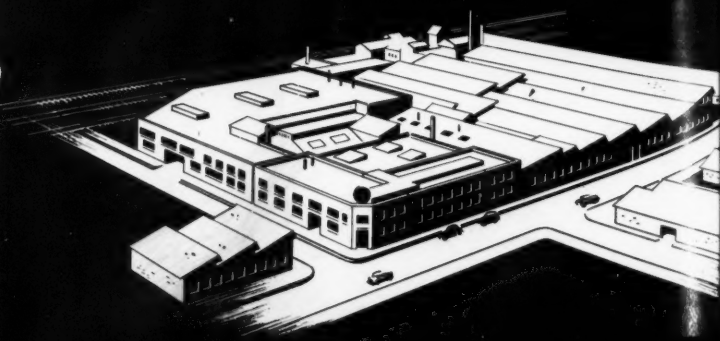
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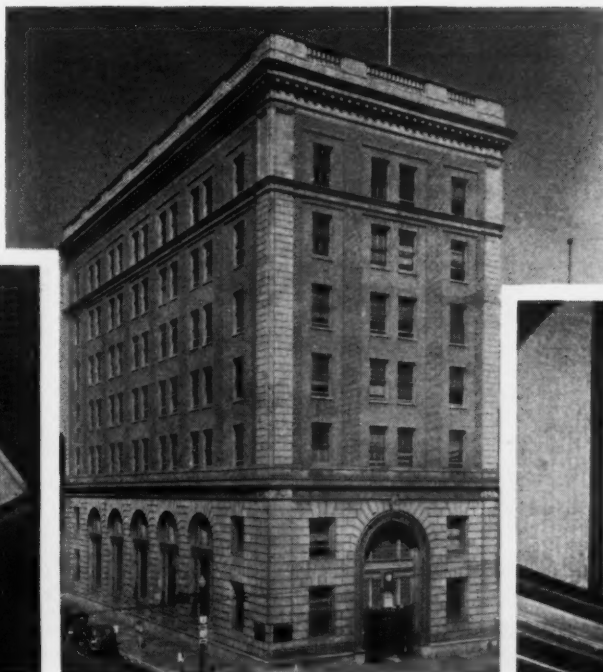
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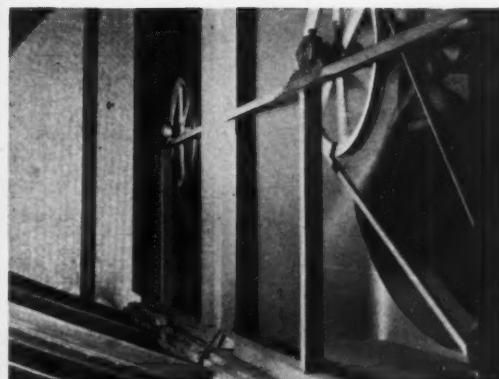
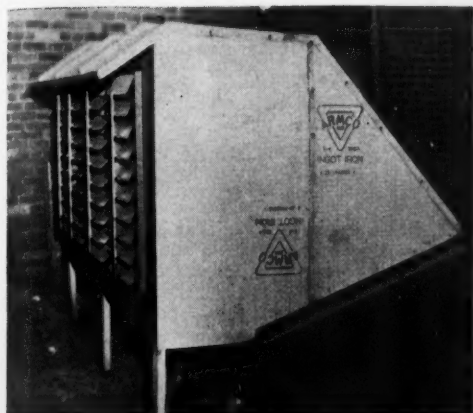
HUNTINGTON PARK, CALIFORNIA



The twin 36-inch fans in the First-American Bank & Trust Co. are housed on the roof of the light court as shown below. Note automatic louvres which close when fans are idle.



Left — First-American Bank & Trust Co. building and, below—Inside of one fan housing specially constructed for this installation.



Imagination Sells Commercial Ventilation

Is the studied opinion of E. B. Sickie, Middletown, Ohio, based upon his experience of two years in selling ventilation as partial cooling to commercial establishments. How he gets prospects, what he claims, and the results are related.

ANY sheet metal man or heating and ventilating dealer, with just a little imagination plus good common sense, can build a profitable business in commercial ventilation, is the belief of Ed B. Sickie, owner and manager of E. B. Sickie & Associates, a ventilating and air conditioning dealer in Middletown, Ohio, who, in little over a year's time, has built up a profitable business in both the commercial and residential ventilation fields.

Business Is Cumulative

In 1939, Sickie first became interested in "comfort cooling" when he took on the dealership for a small attic fan manufacturer. That year he only sold two jobs. However, according to Sickie, he did not lose faith in ventilation and in 1940 really began to concentrate his efforts on building a ventilation business.

Early last year, E. B. Sickie and Associates took over the Middletown dealership for Niteair Comfort Cooling Units, manufactured by the Lau Blower Co., Dayton, Ohio. During the last season, Sickie sold and installed over 40 commercial and residential ventilating installations.

In the experience of Ed Sickie, this business is cumulative. A few good installations made

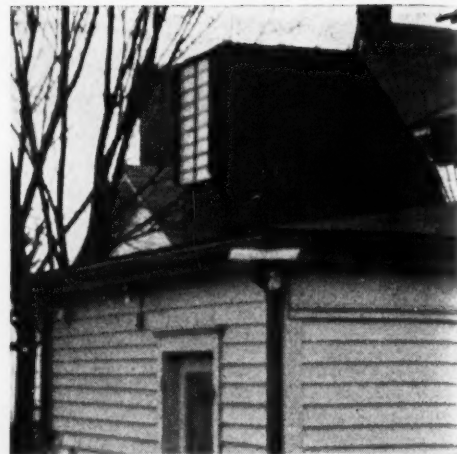
the first season, properly planned and installed, mean many more jobs for the dealer the next season.

"I try to make each installation a testimonial in my favor," Sickie states, "and as a result, the user invariably becomes a booster and a salesman for me. So far, in every case where we have made an installation, the buyer has been so well pleased we have been given his permission to use his name as a reference."

Use "Common Sense"

Of almost equal importance to proper planning and installation, in the opinion of Sickie, is the proper selling of the job *after* the installation work has been completed. His experience is that you can't expect to have a satisfied customer unless you show the buyer how to use the ventilating equipment under all types of weather conditions.

Once the buyer understands how to operate the equipment as it is intended to be used, the dealer should have very few service calls to make. This means that the dealer's profit stays in his pocket, instead of being frittered away in service calls. This also eliminates the possibility of a dissatisfied customer right at the start.



Left — Exterior of Baker Funeral Home showing fan mounted in housing on chapel roof. Right — Closeup of Baker fan housing which shelters the 36-inch, two-speed fan.

One of the best features of the comfort cooling business, declares Mr. Sickie, lies in the fact that the market north of the Ohio River has hardly been touched in either the commercial or residential fields. Another is the substantial profits an active dealer can make during what is ordinarily an "off season." E. B. Sickie & Associates report a dealer's net profit for 1940 of more than \$1100 made from the installation of comfort cooling units. This represents Sickie & Associates' NET PROFIT, after all overhead, inventory and selling costs have been paid out.

During the same period, one Middletown sheet metal contractor made over \$200 net profit on 22 installations sold by Sickie & Associates. The Sickie company does not install the fans it sells but subcontracts installation to several local firms. Sickie does, however, engineer and plan and supervise every installation.

This is an average net profit of about \$18 on each installation for the installing contractors.

Importance of Commercial Field

Many heating and ventilating dealers think of comfort cooling solely as attic fan installations

in residences, Sickie believes, and as a consequence they are overlooking the tremendous sales possibilities in the commercial ventilation field.

Because of the speed up of industry in every community, there is a rapidly increasing demand for proper ventilation. That dealers handling comfort cooling units should get a large share of this business seems only logical, Sickie believes, when one considers that the panel type belt-drive fan moves more air for less equipment cost than any other type of equipment built.

Typical Installations

Three good examples of profitable commercial installations include a paper mill, a bank and a trucking company's wash garage.

The Gardner-Richardson Company, Middletown, Ohio, manufacturers of papers and paper board, had a bad fume condition in a special processing room 60 by 220 feet.

First considered by the paper mills plant engineer was the installation of a complete system



Left—Wall mounted, 48-inch fan in Rollarena (right) in Richmond, Indiana. Six circulating fans direct air toward the ventilating fan. Openings in front of building admit air to replace air exhausted.

of ducts to bring in fresh air and exhaust the fumes, together with six rotary-type blowers in individual pent houses. In addition, the room would have had to be sealed off from the rest of the plant. The plant engineer estimated, on the basis of a similar installation made in another mill, that the total installation would have come to \$7000 or more.

Sickle suggested, and installed a 48-inch Lau Niteair Fan, equipped with an explosion proof motor, exhausting 22,000 cfm in an opening in the wall at the end of the room. In addition, a series of directional fans were suspended from the ceiling through the length of the room, each one directing the flow of air toward the Lau Unit.

As a result, a definite movement of air throughout the room was achieved. The fumes were completely eliminated. And healthful air comfort was assured for the workmen at all times.

This installation only cost the Gardner-Richardson Company \$550. Yet the dealer and contractor both made a fair profit.

Another interesting installation was made in the First-American Bank and Trust Co., Middletown, Ohio. Here the problem was to ventilate the banking rooms and supply a constant change of fresh air, without recirculating the air at any time.

A skylight over the banking rooms offered the solution to the problem. The glass on one side was removed and two 36-inch units were installed in small metal pent houses, each with automatic shutters and separate electric controls. (See photograph.)

Under this arrangement, the bank can exhaust

either 10,000 or 20,000 cubic feet of air per minute. In the winter, they operate only one unit for ventilation. In the summer, they operate both units all night to reduce the temperature in the banking rooms, thereby perceptibly lowering the temperature by morning.

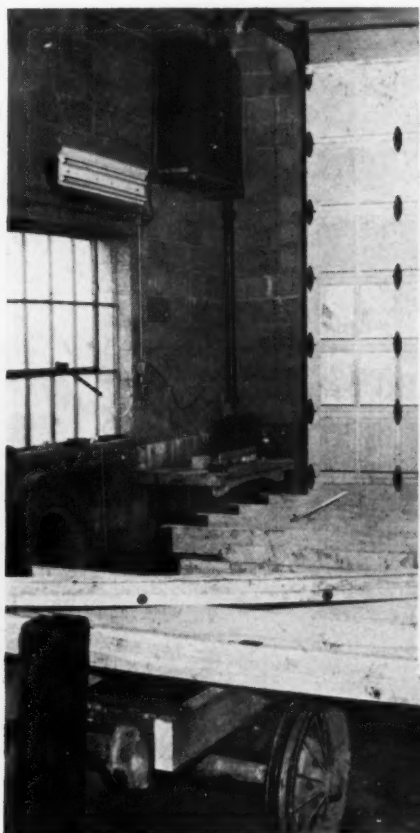
As a result of the popular reception of the ventilating job by employees and customers, the bank's board of directors plans to install a complete air conditioning system, using the original ventilating fan system as a helpful essential feature of the new installation.

Another commercial installation is in the truck wash-rack building of the Dumford Trucking Co., Middletown. In this building, trucks and tank trailers are washed with high pressure steam. Formerly, it was only a matter of seconds until the rack room became so clouded with steam the operator was unable to see to do the washing.

Here the 30-inch unit with vapor proof motor and automatic louvres was placed in the side wall of the building. A screened opening to permit the introduction of fresh air was introduced at the other end of the shop. The result is complete elimination of clouding and perfect working conditions no matter whether the steam washer or the painter's spray gun is in operation. Total cost of the installation was \$160.

Commercial Sales Prospecting

Sickle says he gets his commercial business by personal solicitation. He visits industrial plants or any place of business where he thinks there might be a ventilation problem. In factories, he



In the Dumford Trucking Co. wash rack building this 30-inch fan removes all steam, fog and ventilates the interior winter or summer. The motor is vapor proof.

first talks to the plant superintendent and gets permission to make a survey. Then he looks around the building for "hot spots"—places where ventilation is bad. He also checks spots for fumes, lack of fresh air, poor visibility due to steam conditions. Then he shows the management how comfort cooling units can be used to take bad air out of the building; bring fresh air inside and move air within the building itself.

In many cases, "hot spots" are so obvious Sickie wonders why someone hasn't already sold the job. Such was the case of the Rollarena, a super skating rink in Richmond, Indiana.

Sensing the possibilities of comfort cooling here, Sickie sold the Rollarena management on installing a 48-inch unit with automatic louvers placed in the rear wall of the rink. Six small directional fans suspended from trusses direct air currents toward the exhaust unit. Screened openings placed in the front of the building provide plenty of fresh air.

As a result of this installation, the Rollarena was used with satisfaction all last summer. During the daytime, the very comfortable air movement keeps down the heat. And during evening skating hours, the temperature of the entire Rollarena is reduced to the outside temperature. Total cost—\$750.

Funeral Homes

A great many funeral homes have their own chapels. Such is the case with the Baker Funeral Home in Middletown. Their chapel is located in

a one story annex with a nearly flat composition roof. The roof had been insulated, making the chapel difficult to cool after it once became thoroughly heated.

The owner was considering the installation of a complete air conditioning system when Sickie approached him with the idea of cooling with an air comfort unit. A metal pent house was built on the chapel roof in which the dealer installed a 36-inch, two-speed unit with automatic shutters.

During the summer months, the system is operated at full speed, except during the service when it is turned down to low speed. When run at low speed, no noise is perceptible from the inside, despite the fact that the chapel is small.

Results: very satisfactory. Cost, including ornamental ceiling grille, came to \$400. Incidentally, this proved to be a nice profit job for the sheet metal end of the business.

Sickie Is Enthusiastic

Anyone who meets dynamic, enthusiastic Ed Sickie readily believes with him when he says, "Comfort cooling can be sold like a breeze once you get enthusiastic about it." Although he relies about 99 per cent on personal solicitation and 100 per cent on satisfied customers for all his sales, he does believe that the more sales promotion a dealer can possibly give comfort cooling, the more will be his sales and profits.

Early this season, Sickie & Associates had a list of 22 people who have requested quotations on

(Continued on page 81)

Center—Four ventilating fans in general office of Kroger Grocery & Baking Co. (Photo by K. Rarich & Co.) Below—Exterior of super market in Middletown. Right—Two fans in Kroger warehouse room which pull air through the whole store.



Air "Avidity"

A New Thought in Residential Humidification (Part 3)

By O. J. Kuenhold

Humidification Engineer, Monmouth Products Company

AIR Humidity is very confusing to laymen principally because of the many measurement terms employed which, in general, have names that do not clearly express their meaning.

Air Humidity will become clearer if we remember that there are only two direct measurements of air humidity namely;—how much water vapor each pound of air holds, and how much *more* moisture each pound of air can absorb.

Air containing water vapor can do either one of two things: It can impart moisture or it can absorb moisture. Obviously, air cannot impart more water vapor than it holds nor can it absorb more water vapor than the difference between the water vapor it *already* holds and the *most* it can hold.

The amount of water vapor that air can hold is determined by its temperature—the higher the temperature, the more water vapor it can absorb and hold. When air holds all the water vapor it can hold, at its temperature, it is 100% saturated. If it holds, for instance, 25% of the water vapor it can hold, at its temperature, it is 25% saturated but it can hold 75% more water vapor; that is, its capacity for absorbing *more* moisture is 75% of all the moisture it can hold at that temperature and this additional capacity measures the greed or avidity of the air for moisture so we call this the "moisture avidity" of the air.

Note that the "per cent of saturation," commonly called "relative humidity," is not a direct measurement at all. It is merely the mathematical ratio of the moisture that the air already holds to the maximum moisture that the air can hold *at its temperature*. The per cent of relative humidity or saturation means nothing whatever unless we also know the air temperature when we can refer to a table or chart, such as in preceding articles of this series, to find the moisture content and moisture deficit or avidity,—the only two measurements of air humidity with which we need concern ourselves.

In considering the moisture extracting or drying effect of air we need consider only its "avidity." In such case we need pay no attention whatever to the moisture content because it

makes no difference whatever how much moisture the air already contains, the only factor that determines the moisture extracting capacity of air is its moisture deficit or avidity, in grains of water vapor per pound of air. This directly measures the power of the air for extracting moisture from our breathing passages, eyes, skin, etc., as well as from the interior walls, floors, ceilings and furnishings of a house. This simple and plainly evident fact has been widely overlooked.

The moisture avidity of air determines our breathing comfort, which is separate and distinct from body comfort. Air may be warm enough to give us complete bodily comfort but it can have such high moisture avidity as to result in a stifling sensation which is of course an unhealthy condition. The so-called "fresh air fiend" who opens windows is in reality a "humidity hound." Opening a window reduces room temperature. This reduces the moisture absorbing capacity and consequently the avidity of the air, and the stifling sensation is relieved. The indoor air in homes is practically always fresh but it often feels stuffy or stifling due to higher avidity than our breathing mechanism is adapted to handle. The craving for fresh air is in reality an instinctive craving for air having lower and more healthful moisture avidity.

Vapor Pressure

Vapor pressure is frequently mentioned in articles on humidity, but it does not require extensive consideration in this article. Vapor pressure or density is simply another way to measure the water vapor content of air but, instead of giving the measurement in grains of water vapor per pound of air, the pressure resulting from the density of the water vapor is given in either pounds per square inch or in inches of mercury. Vapor pressure is the force that causes water vapor to flow from a region of higher vapor content or density to one of lower vapor pressure. The vapor pressure is a component part of atmospheric pressure and is effective in all direc-

tions. It is vapor pressure that causes water vapor to diffuse in all directions and to all rooms open to each other.

Humidity Limits

In considering the moisture imparting or depositing ability of air we are not at all concerned with its moisture avidity but are solely concerned with its water vapor density or contents. There is a practical limit to how high the vapor density, in grains per pound of air, can be raised in homes during cold weather. This high limit is determined by the vapor density at which moisture will condense on windows and possibly on outside doors. Excessive indoor humidity may even result in condensation within outside walls which, in certain wall structures, may accumulate to a harmful extent in event of excessive indoor humidity during continued excessively cold weather.

Dew Point

When air is cooled, the maximum amount of water vapor it can hold becomes progressively less. The amount of water vapor originally held by the air will be an increasingly higher per cent of saturation as the air becomes cooler until a temperature is reached at which the air is more than 100% saturated. The surplus moisture will then condense. This is the dew point temperature.

For instance, air at 70° and 35% saturation holds 38.7 grains of moisture per pound. When the temperature is reduced to 41½° the 38.7 grains of moisture the air contains will saturate it to 100%. The 41½° is therefore the dew point temperature of air containing 38.7 grains per pound.

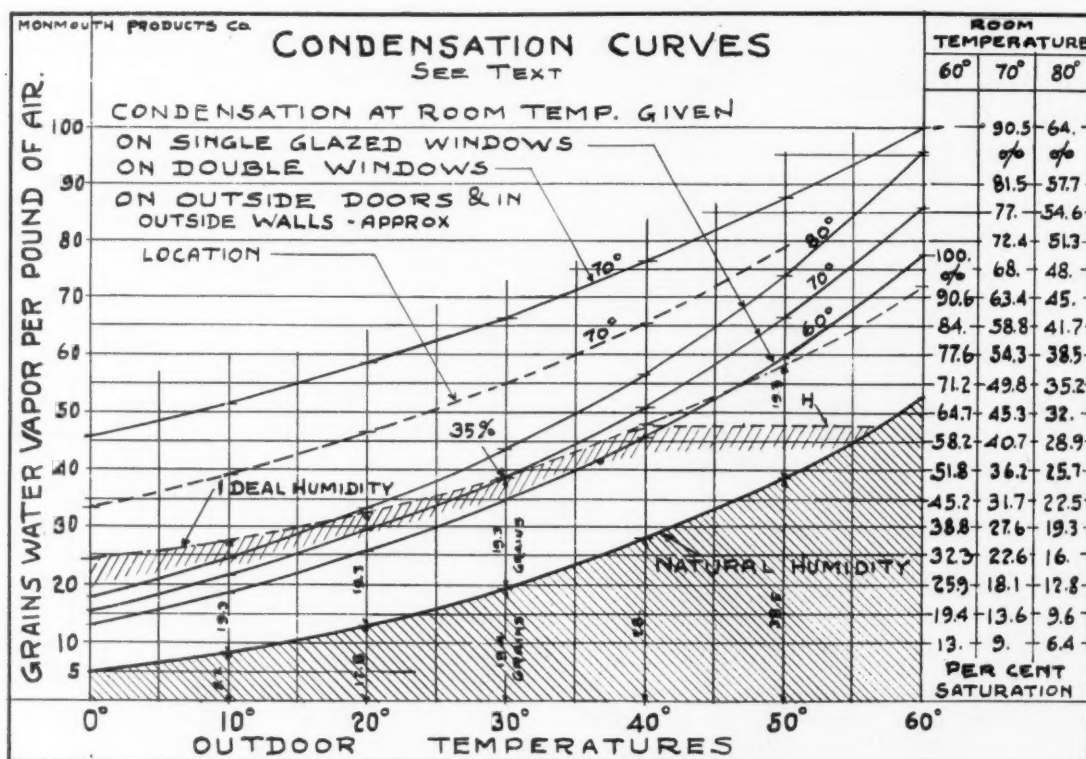
Window Condensation

When the air film lying next to the inner side of the window glass becomes cooled below its dew point, window condensation occurs. The temperature of the inner glass surface will be at some point between the room temperature and the outdoor temperature. When the room temperature is 70° it ranges from about 18° above outdoor temperature in zero weather to nothing above outdoor temperature in 70° weather.

In Chart 2, the lowest curve, called "Natural Humidity," shows how many grains of water vapor is contained in the atmosphere per pound of air. The curves marked 60°, 70° and 80° show how many grains of water vapor must be present per pound of air for condensation to begin on single glazed windows when the room temperature is respectively 60°, 70° and 80°. This assumes the usually prevailing low wind velocity of winter. At higher wind velocities against or across the windows the window condensation begins at slightly lower indoor humidity.

The upper curve shows the room humidity at which condensation begins on windows to which

[Chart 2]



a sealed storm sash has been added. The indoor humidity is given in terms of water vapor content in grains per pound of air, rather than in terms of relative humidity, because this reveals facts much more clearly. The measurements in vapor content of the air can however be translated into terms of per cent of saturation (relative humidity) by means of the scales at the right for respectively 60° 70° and 80° room temperature. For instance, when indoor air contains 40 grains per pound this results in 51.8% saturation at 60°; 36.2% at 70° and 25.7% at 80° room temperature.

The second curve from the top shows approximately the point at which condensation occurs on wood doors exposed to 70° room temperature on the inner side and outdoor temperature on the outer side. The exact location of this curve depends upon door thickness, density of the wood, etc. The location shown is rather low.

The same curve also indicates approximately the combinations of outdoor temperature and indoor vapor contents at which wall condensation may occur, assuming 70° room temperature. This curve may be somewhat lower or higher according to wall structure.

Considerable has been written on the subject of wall condensation, most of it exaggerating this possibility. It is more likely to occur in heat insulated walls but as practically all modern heat insulations include means for blocking the flow of water vapor toward the outside of the wall, the chances of wall condensation are remote.

Humidity Control

The question is frequently asked, "What humidity should be maintained in a home?" It used to be thought that 45% relative humidity should be maintained. This erroneous idea was exploded in a series of articles appearing in *AMERICAN ARTISAN* a few years ago. It is now universally accepted by all authorities that indoor humidity should be reduced proportionately as the weather, and therefore the windows and outside walls, become colder. This eliminates chances of excessive window condensation and condensation in outside walls of usual structures. The chart explains why.

Let us first consider the old recommendation of 45% indoor humidity to see how very wrong it was. Assuming 80° room temperature, we find in the chart (right hand column) that 45% saturation equals 70 grains per pound. Following the horizontal 70 grain line across we see that condensation on single glass windows begins as soon as outdoor temperature gets below 47°, while in zero weather the condensation point is above all condensation curves for single or double windows and outside walls and doors.

Assuming 70° room temperature, the 70° column at the right shows that at 45% saturation the water vapor content of the indoor air is 50 grains per pound. The chart shows that condensation on single windows starts when outdoor temperature gets below 39° and, in zero weather, the 50 grain line is above the condensation point of even double windows and is dangerously above the wall condensation curve. These examples prove conclusively that humidity should not be maintained as high as 45%, in the colder weather—not even in weather below 30° with room temperature at 70°.

The two foregoing examples illustrate malpractice in humidification. Now let us consider proper humidity control.

The bottom curve of the chart shows the "natural humidity" that prevails when no humidifying is done. This gives the moisture contents of the air in grains per pound during various outdoor temperatures. As all indoor air originates from outdoors, the indoor air will have the same water vapor content as outdoor air. Note that as weather becomes colder the air contains progressively less moisture. The ideal humidity to maintain is recommended by the author to be about 19 grains per pound above the natural humidity. This will be at 35% saturation at 70° room temperature in 30° weather. It will double the moisture content in average winter weather (30°) and hold the moisture avidity down to about 70 grains, which as experience shows, gives breathing comfort to most people and is therefore healthful. As weather becomes colder, the moisture content will be reduced and the avidity increased somewhat, but in zero weather the maintained humidity will be 5 times as high as it would be if no humidifying was done.

With the maintenance of ideal humidity and 70° ideal room temperature, vapor spots will appear on some single windows when weather gets down to 30° and this will increase as weather becomes colder but in weather below 20° the window condensation becomes frost and there will be very little if any condensation running down windows.

When double windows (storm sash) are installed the ideal humidity can be raised somewhat above the ideal humidity curve, but it still should be reduced as weather becomes colder. To sum it up, while it would be ideal to maintain about 70 grains avidity or more, in all weather, as in Nature's summer air, practical considerations require some reduction of humidity, and therefore increase of avidity, during the usually short "spells" of extremely cold weather.

In the course of a day the relative humidity will change considerably, but the per cent of rela-

(Continued on page 114)

Cooling System for a Hardware Store

*Designed upon an
existing furnace heat-
ing plant and ducts*

By E. R. Ross

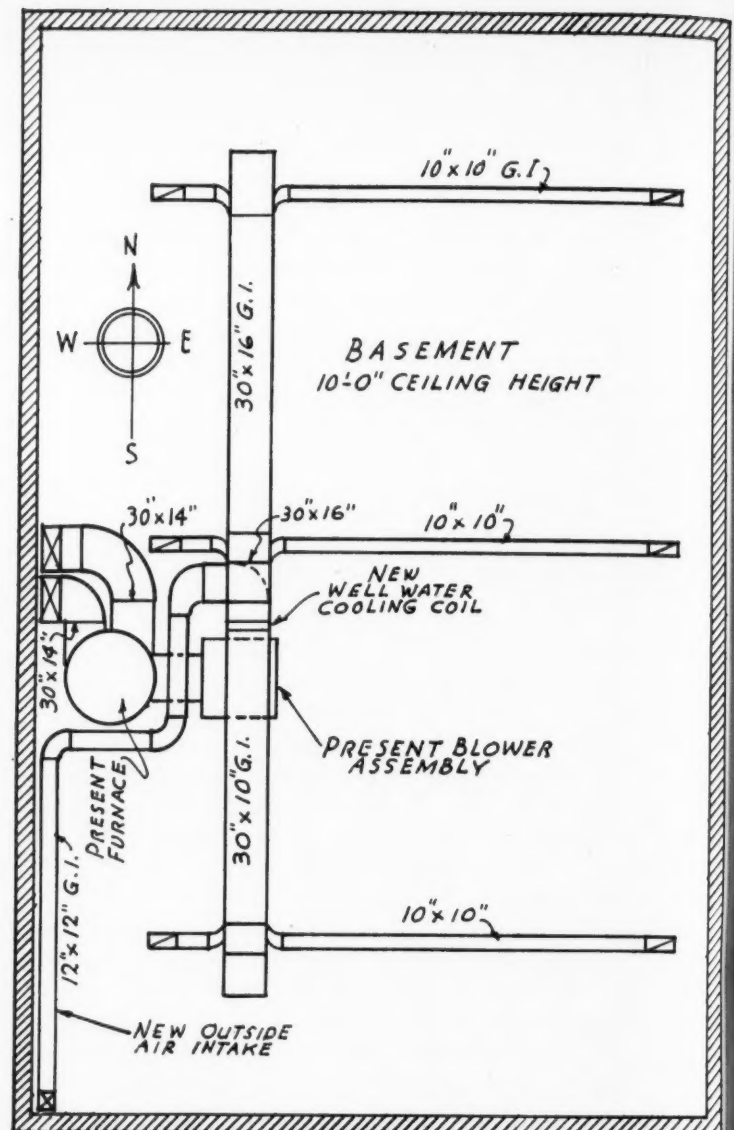
Bevington-Williams, Inc., Indianapolis

VERY often the engineer is confronted with the task of providing a layout and estimate on a job without seeing the job. Usually the client will stand for one exchange of letters regarding the job, but after one he becomes suspicious of the engineer's ability to solve his problem.

The particular inquiry in this case had to do with the cooling of a hardware store and on the only exchange of letters the following information was requested:

1. Building description

- General floor plans with ceiling heights.
- Utilities, such as electricity, water, and drainage facilities with rates, size and location of present services and temperatures of available waters.
- Construction of building and its peculiarities.
- Direction building faces and its relation to the rays of the sun at various hours of the day.
- Number of electric lights, location of same and listing of any other heat generating equipment such as motors etc., with the total wattage in the space to be cooled noted.
- Number of employees and number of customers to figure in cooling load.
- Availability of space for equipment, ductwork etc., and whether there is to be any additional remodeling done at the same time that cooling is added; are all store fixtures permanent or can they be moved readily to accommodate ductwork, etc.?
- Space owned or leased; who pays for utilities such as electricity, water and sewer tax?



PLAN SHOWING PRESENT DUCT LAYOUT
WITH LOCATION OF NEW WATER COIL

Fig. 2—Basement plan showing existing heating duct system which is to be used for cooling. An outside air intake is added to put the cooled space under pressure.

2. Labor conditions

- Will client do all installation work or will it be contracted.

In reply to the above request, we receive the following information:

1. Building description

- First floor plan (See Fig. 1) Basement plan (See Fig. 2).
- Utilities
Electricity available in basement at rear of building. Rate \$0.05/KW.
Floor drain close by present blower. No sewer tax. Well water available at 55 degrees from well in basement.
- Construction of building and its peculiarities;
 - Two stories and basement selling area or display room on first floor.
 - Walls 12" brick with plaster on inside.
 - Building on corner facing north with entire glass front including doors.

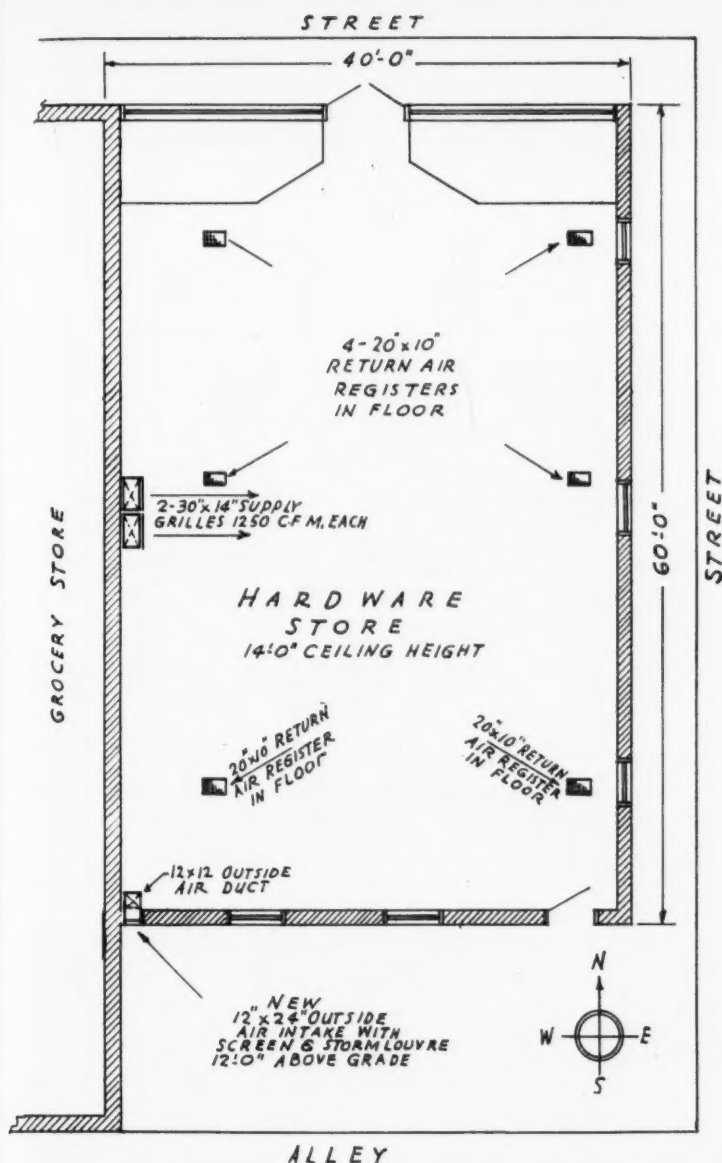


Fig. 1—First floor plan showing floor returns and two side wall air supplies originally used for heating and now used for cooling also.

East wall on side street with three small windows high in wall. Two windows in south wall facing alley. West wall a party wall with grocery store on other side of wall. Second floor used as storage space for merchandise. Basement and second floor ceiling heights 10 feet while first floor is 14 feet.

- (d) Building faces north. Entire east wall is exposed to sun all morning. West wall receives protection from building next door. Grocery store always cool. South wall receives protection from building across the alley in the late afternoon.
- (e) Four fluorescent electric light fixtures at 80 watts each or a total of 320 watts. No showcase or display lighting and no auxiliary motors for operating displays, adding machines, etc.
- (f) Four employees and 30 customers should be considered for cooling.
- (g) There is a full basement under the building and as shown on basement plan (Fig. 2) there is a warm air heating system with an auxiliary blower already in place.

The quantities of air handled are indicated on the plan and it is desired to use the present air distribution system in conjunction with well water from a well located near the rear of the basement. Owner does not anticipate any additional remodeling to be done at this time.

(h) Client owns building.

- 2. Owner neglected to answer this part of inquiry so that estimate will be set up on basis of prevailing union wages as paid in most of larger cities.

Where existing equipment is to be used it is essential not to alter the system and upset its present usefulness. It would be a mistake to completely revamp the air distribution system to satisfy the cooling cycle and in so doing upset the heating.

Checking Size of Old Equipment

The first problem with existing equipment is to see if its size is ample. This sets up much the same as any other cooling problem in that the heat gain calculations must be figured first. With the use of the above information and floor plans, we arrive at the following: (See Table 1—Heat Gain Calculations.)

The plans indicate the blower capacity to be 2500 C.F.M. Using a 16-degree diffusion temperature, which means 16 degrees difference between the temperature of the air leaving the grille and the design room temperature, we find that the capacity of the present blower is ample. The addition of a water cooling coil in the duct system will increase the static pressure on the present system which will reduce the capacity of the fan at its present speed. This can be overcome by speeding up the fan which can be taken care of by changing its vari-pitch drive as most present day fan sets are provided with vari-pitch drives.

Space Under Pressure

We would definitely recommend putting the store under pressure as cooling systems normally operate better this way and, in addition, most ventilation codes set up minimum requirements for outside air. The present plan does not show any outside air connection, so we have shown one to handle $33\frac{1}{3}\%$ outside air. While we normally recommend 100% outside air available with manual damper control mainly for economy of operation in off peak seasons, we do not feel the expenditure justified in this particular case as the cooling problem is not a serious one and the operation of the well is not expensive.

The cooling coil should be sized to meet the conditions set up in Table 2 under Design Temperatures with a 500 feet per minute face velocity. The coil can be located in the return air

Table 1—Heat Gain Calculations, Internal Sensible Heat Gain

TRANSMISSION THROUGH WALLS					RADIANT SUN EFFECT	
Ex- POSURE	SQUARE FT. AREA	COEFF. OF HEAT TRANS.	TEMP. DIFF.	BTU. PER HOUR	BTU. PER HOUR PER Sq. Ft.	BTU. PER HOUR
North	Gross Windows	560	1.13	15	9500	
West	Gross Net	840	.24	5	1010	
South	Gross Windows	560	1.13	15	1017	21
	Net	500	.24	15	1800	1425
East	Gross Windows	840	1.13	15	509	53
	Net	810	.24	15	2920	26
Ceiling	Net	2400	.28	15	10100	

Conduction Load 26,849 Excess Solar 8,285

People Load

Sensible Heat— 34×225 = 7,650
Latent Heat— 34×200 = 6,800

Electric Light Load

Sensible Heat— $320 \text{ watts} \times 3.42$ = 1,095

Total Internal Load

Sensible

Conduction 26,846
Excess Solar 8,285
People Load 7,650
Light Load 1,095

Total Internal Sensible..... 43,876

Latent

People Load 6,800

Total Latent Internal..... 6,800
Total Internal Load = $43,876 + 6,800 = 50,676$ Btu./hr.

COST ESTIMATE FOR COOLING HARDWARE STORE USING EXISTING AIR DISTRIBUTION SYSTEM

1. Water Cooling Coil.....	\$ 200.00
2. Galvanized Water Pipe and Fittings	75.00
3. Pipe Dope, etc.....	5.00
4. Hangers, Supports, etc.....	15.00
5. Sheet Metal Work.....	150.00
6. Automatic Controls	150.00
7. Pipe Covering	100.00
8. Cutting Patching & Painting.....	25.00
9. Pipe Fitting, Labor—10 days.....	120.00
10. Social Security and Insurance.....	8.40
	<hr/>
	\$ 848.40
15% Overhead	127.06
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	\$ 975.46
10% Profit	97.55
	<hr/>
	\$1073.01

Table 2—Design Temperatures

TEMP.	DRY BULB	SENSIBLE HT./LB.	DEW POINT	LATENT HT./LB.	WET BULB	TOTAL HT./LB.
Outside	95	22.96	66	14.85	75	37.81
Room	80	19.32	60	11.69	67	31.15
At. Grille	64	15.45	59	11.28	60.5	26.53
Ent. Coil	85	20.53	62	12.56	69.5	33.09
Lv. Coil	63	15.21	59	11.28	60.4	26.49

Ventilation Requirements & Heat Gain

Total Internal Sensible 43876
Total Air for Cooling = $\frac{43876}{1.08 \times \text{Diffusion Temp.}} = \frac{43876}{1.08 \times 16}$
= 2535 C. F. M.—Use 2500 C. F. M.
Outside Air 840 C. F. M.
Sensible Heat per lb of outside air..... 22.96 Btu/lb
Sensible Heat per lb of room air..... 19.32 Btu/lb
Sensible Heat Gain of O.A.— 840×4.5 (22.96 — 19.32)
= 13,750 Btu/hr.
Latent Heat per lb of outside air..... 14.85 Btu/lb
Latent Heat per lb of room air..... 11.69 Btu/lb
Latent Heat Gain of O.A.— 840×4.5 (14.85 — 11.69)
= 11,950 Btu/hr.

TOTAL HEAT GAIN

SENSIBLE HEAT

Internal 43,876 B.T.U./hr.
Ventilation 13,750 B.T.U./hr.

Total 57,626 B.T.U./hr.

LATENT HEAT

Internal 6,800 B.T.U./hr.
Ventilation 11,950 B.T.U./hr.

Total 18,750 B.T.U./hr.

TOTAL LOAD TO BE HANDLED BY WELL WATER COILS = $57,626 + 18,750 = 76,376$ B.T.U. PER HOUR, THIS BEING THE EQUIVALENT OF 6.4 TONS OF REFRIGERATION.

duct just before it enters the blower assembly. The coil could be located in the blower assembly in front of the fan intake if provisions have been made in the assembly to receive a coil. There should be a drain pan installed under the coil with a drain pipe running to and dumping over the nearest floor drain.

The estimate provides for temperature control. We would suggest a thermostat in the store properly actuating a three-way water valve to the cooling coil. When the valve is fully closed a relay will stop the pump on the well. This could all be eliminated and the system operated much the same as some unit heater installations. If cooling is required, start the pump and fan and shut either or both off when the occupants feel comfortable.

By adding the necessary head on the well pump and installing the additional piping, the roof could be sprayed with the well water and thereby reduce the temperatures in the second floor area.

Furnace Installers Are Not Entitled to "Seasonal" Exemption

Recently a reader asked us why furnace installers may not claim "Seasonal Exemption" because we have peak busy seasons. The reader offered that other trades, like carpenters, are getting such exemption from 40 hours per week. We asked the U. S. Department of Labor, Wage and Hour Division, for a ruling. This is its reply.

PICKING strawberries in Florida and installing furnaces in Northern Michigan would seem to be occupations that are pretty far removed from each other, geographically, physically, and esthetically. Actually, they are far removed, although they do have one thing in common—both occupations may in some instances be considered activities of an interstate character.

Even this connection, at first glance, might seem a little far-fetched. Obviously, the strawberries from Florida are shipped north, east, south, and—no, not west; they have their own berries, they say, in California.

But how does a furnace or other heating or air conditioning unit enter into interstate commerce when perhaps it is manufactured in Kalamazoo and installed in a plant manufacturing breakfast foods for interstate commerce in Battle Creek, just over in the next county?

How You Get Into Interstate Commerce

Actually, while the equipment itself may not have crossed state lines, its installation and use is considered necessary in the production of the breakfast foods which are shipped into the next state or to all parts of the country. The same would be true if the equipment were installed in a flour mill, foundry, stamping plant, or any other operating establishment whose products are shipped across state lines, either in their original form or as part or ingredients of other products. The installation of such a furnace in a building used to produce goods for commerce is "a process or occupation necessary to the production" of the goods.

And so the employees engaged in installation of the furnace or allied equipment are deemed by the Wage and Hour Division of the U. S. Department of Labor to be covered under the Fair Labor Standards Act.

This Act, commonly known as the Wage and Hour law, requires that a wage of not less than 30 cents an hour be paid to all employees engaged in commerce or in the production of goods for commerce. It further requires that to such em-

ployees overtime compensation of not less than time and a half the regular rate be paid for all hours worked over 40 in any single workweek. There is absolutely no limitation on the number of hours that can be worked provided that overtime is paid as required.

Congress authorized certain exemptions. It specifically exempted employees in agriculture from both the wage and hour provisions of the Act and allows exemptions from the overtime provisions for certain other industries of a "seasonal nature." For instance, in sand and gravel production, in areas where climatic conditions prevent operation for more than just a few months each year.

No "Season" Exemption for Furnace Men

Claims for seasonal exemption have been made by certain furnace concerns in Michigan and Wisconsin. These claims apparently have been based on the fact that the demand for their products and services is seasonal.

Actually, there is no reason why such work cannot be carried on at any time of the year in any part of the country. Heating equipment and supplies are just as readily available in June as in December or in March as in October, and therefore, the seasonal exemption has not been granted to such industries or branches thereof. There are rush periods, it is true, and under the present program of national defense construction, heavy demands are being made on heating, piping, and allied concerns.

In support of the furnace men's claim for exemption, the statement has been made that some trades are allowing a working schedule in excess of 40 hours. There is nothing in the Wage and Hour Law that prevents working even 168 hours, the full week. The only requirement is that overtime at time and a half be paid to covered individuals who work more than 40 hours in any one week. Compliance with the law in this regard is no excuse for failure to live up to collective bargaining agreements whose provisions might be milder or stronger than the Wage-Hour require-

(Continued on page 112)

The Installation and Use of Attic Fans

[Part 3]

The Engineering Experiment Station of the Agricultural and Mechanical College of Texas has conducted considerable research on attic and window fans — their costs, results, practicability. This research has covered both laboratory and field installations. From the data gathered the college has published Bulletin 52. Part I of this series appeared in the April issue; Part 2 in May. Other articles will follow.

TWO important points should be kept in mind in planning ceiling grilles. If at all possible, the grille should be located in a central hall so that air can be readily pulled from any or all of the rooms as desired. The free area, or the daylight area, of the grille must never be less than the area of the fan. For homes and other locations where quiet operation is desired or is essential, the net grille area should be of sufficient size to assure a grille velocity of not more than 750 feet per minute. To determine the net or free area required, divide the capacity of the fan, in CFM, by 750 (area equals volume divided by velocity), or refer to Table IV for recommended sizes. This is net area only and the total grille must be larger as shown in Table IV, depending upon the type of grille and whether or not it is covered with screen.

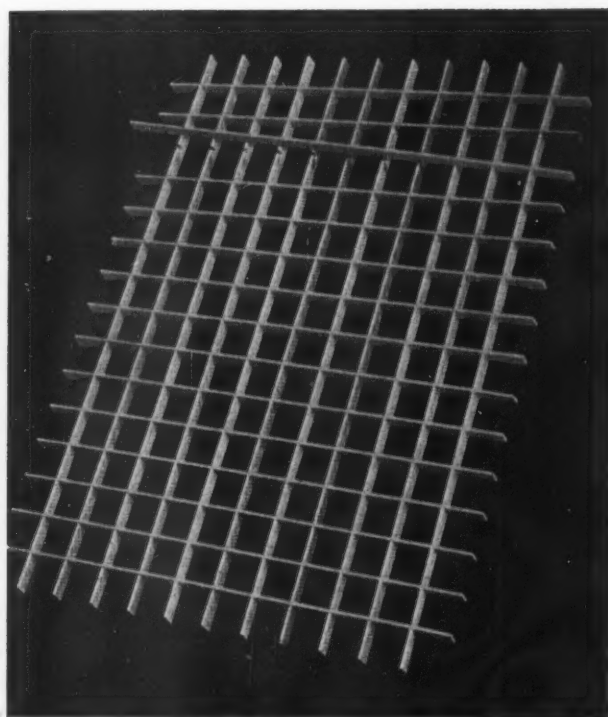


Fig. 20—Typical wooden grille used for air intake opening. (New Orleans Public Service Corp. photo).

If space permits, even lower velocities are desirable in order that the installation may be as quiet as possible. A velocity through the grille of between 500 and 750 feet per minute is considered good practice.

Wood and Metal Grilles

Perhaps the most common types of grilles used are the wooden egg-crate type, Fig. 20, and the expanded metal grille made of $\frac{3}{4}$ " No. 16 gauge Shelf-X mesh illustrated in Fig. 21. Wooden grilles constructed of $\frac{1}{4}$ " x $1\frac{1}{4}$ " white pine strips notched 3" on centers as shown in Fig. 20 and mounted with the proper trim will harmonize with the decorative plan of any home. (See Fig. 23.) This type of grille has a net free area opening or efficiency of 80 per cent.

The expanded metal grille shown in Fig. 21 is

TABLE IV
Grille and Louver Sizes

Fan Capacity CFM	Net Grille or Louder Area Sq Ft	Gross Grille Area Sq Ft		Gross Louver Area Sq Ft	
		Wood Grille (Fig. 20) 80%	Metal Louder (Fig. 21) 63%	Wood Louver (Fig. 35) 75%	Metal Lou (Fig. 35) 70%
4000	5.3	6.7	8.4	7.1	7.6
5000	6.7	8.3	10.6	8.9	9.5
6000	8.0	10.0	12.7	10.7	10.4
7000	9.3	11.7	14.8	12.4	13.3
8000	10.7	13.3	16.9	14.2	15.2
9000	12.0	15.0	19.0	16.0	17.1
10000	13.3	16.7	21.1	17.8	19.0
11000	14.7	18.3	23.2	19.6	20.9
12000	16.0	20.0	25.4	21.4	22.8
13000	17.3	21.7	27.5	23.1	24.7
14000	18.7	23.3	29.6	24.9	26.7
15000	20.0	25.0	31.7	26.7	28.6
16000	21.3	26.7	33.8	28.5	30.5
17000	22.7	28.3	35.9	30.5	32.3
18000	24.0	30.0	38.0	32.0	34.3

Based on 750 FPM

Louver Covered with $\frac{1}{2}$ " Mesh Hardware Cloth Add 2%
Louver Covered with 16 Mesh Screen Add 100%

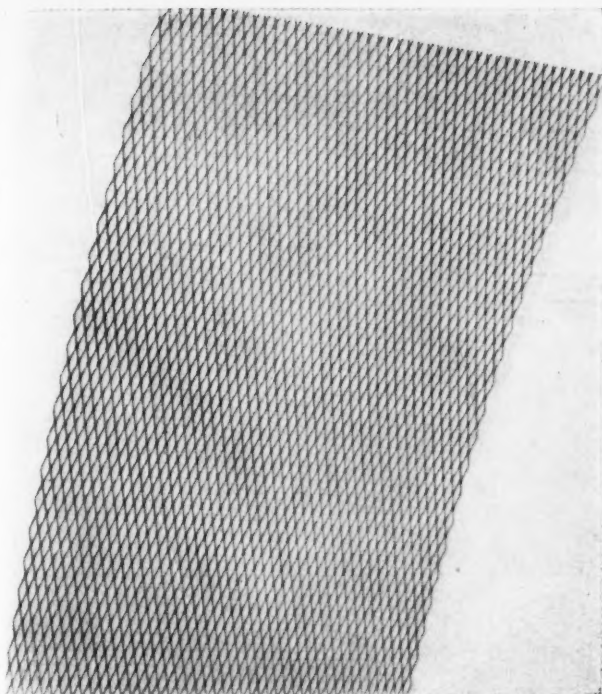


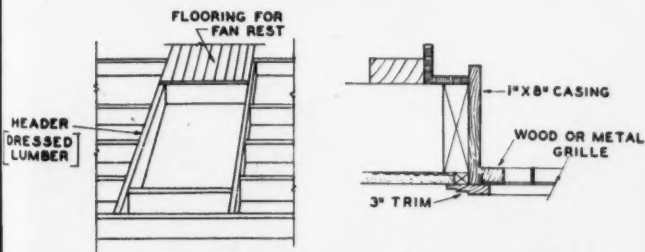
Fig. 21—Expanded metal used for intake grille is easy to form and attractive in appearance when painted. (New Orleans Public Service Corp. photo).

proving very popular, because it is less expensive and easy to work with, and when painted and properly trimmed, makes an attractive installation. This $\frac{3}{4}$ " No. 16 Shelf-X metal lath has a net free area or efficiency of 63 per cent.

There are many other ornamental grille materials obtainable over a wide range of costs. In choosing such special materials, care must be exercised to size the grille on the net free area of the material and to use materials with air openings comparatively large in order to prevent objectionable air noises. The unit net free area should never be less than 60 per cent.

Construction of Intake Grille

In an existing structure, after the most advantageous location for the ceiling grille or intake has been selected, the attic should be inspected over this point to make sure that no plumbing, immovable conduit, or special devices interfere with the fan installation. The hole should be cut two inches larger than the grille on all sides to allow for header room or plaster stop. In order to pre-



Left—Fig. 24—Suggested framing around intake opening with joists stiffened and tied and platform for fan. Center—Fig. 25—Detail of framing and trim application at intake grille. Right—Fig. 26—Automatic ceiling shutter in fan box. Blades open on suction when fan runs and close when fan stops. (Reed Unit-Fans photo).



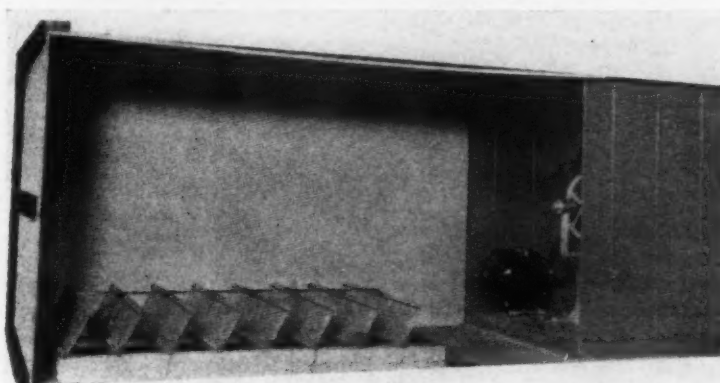
Fig. 23—Typical wood grille installation in stair ceiling. Note neat finishing with trim. (Dallas Engineering Co., Inc. photo).

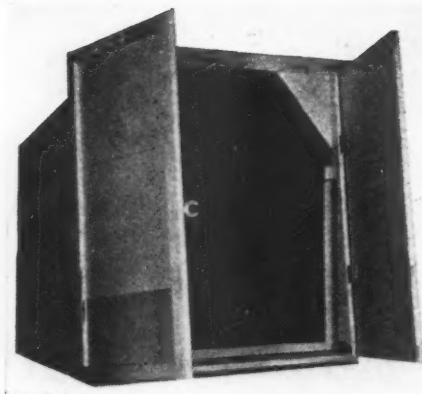
vent weakening the ceiling after the opening has been made, and the joists cut, headers should be placed on the ends of these joists in the manner indicated in Fig. 24.

After the fan has been placed in the attic, the intake opening should be faced on the inside with 1" x 8" casing lumber, and the entire opening should be finished with door or window trim of the same pattern used elsewhere in the house. This trim should overlap into the hole and about one-half to three-fourths inch on all four sides as a rest or support for the grille. (See Fig. 25.)

Automatic Louvre Grille

Another type of ceiling opening used extensively is the automatic ceiling shutter or grille, illustrated in Fig. 26 which opens when the fan is started and closes when the fan is not in motion. These are usually constructed of lightweight aluminum or steel vanes balanced so that a very small suction is required for their operation. For quietness, the overlapping lip of the vanes should be faced with a thin felt strip. The hinge pins of the vanes should be cleaned at least once a season,





Left—Fig. 28—Double, automatic doors on exhaust side of fan are necessary in apartment installations when automatic louvers are not used.

Right—Fig. 29—Performance curves for a 42-inch fan. Note how .12 inches of resistance reduces fan delivery 50 per cent.

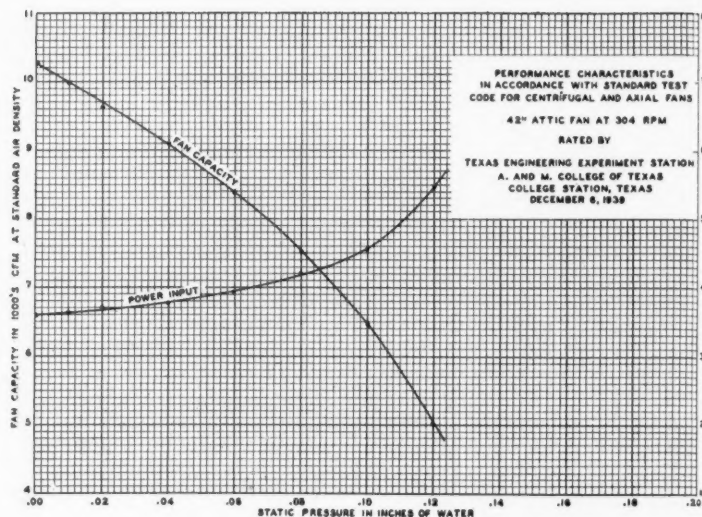
or oftener if required, and oiled with a light weight machine oil so that they will operate quietly and with the least possible resistance. An accumulation of lint and dust, if not periodically removed, may retard the operation of the automatic shutters and thus reduce the efficiency of the fan.

Automatic grilles or ceiling shutters prevent mosquitoes and flies from entering the house through the attic and eliminate hot back drafts when the fan is not in operation. Automatic ceiling shutters (Fig. 26) or double automatic doors on the exhaust side of the fan (Fig. 28) are necessary in multiple apartment houses where each apartment uses a separate fan in the same attic. This prevents fans from blowing air from one apartment or the attic into another apartment in which the fan is not being operated. Ordinarily automatic grilles prove more satisfactory than automatic doors.

4. Attic Exhaust Openings

Attic exhaust openings may be any one of many possible kinds or may be a combination of several types: such as existing attic windows, either existing or specially constructed louver openings at gable ends or in dormers, metal roof ventilators, penthouses, openings under the eaves between rafters, or exhaust grilles in the ceiling of a porch.

It is of vital importance for successful fan operation to have adequate exhaust openings in the attic; and, for the best performance these should

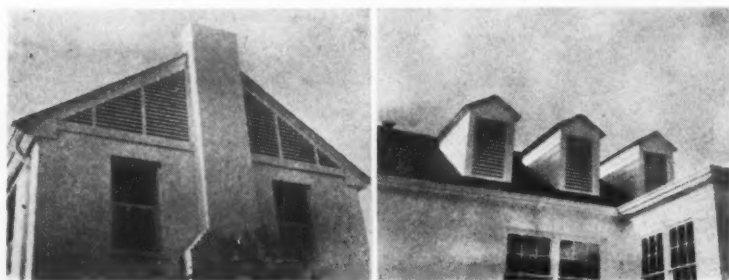


not be less than indicated in Table IV, and wherever possible, these exhaust openings should be built into the side of the house away from the prevailing winds.

The performance curves of Fig. 29 illustrates the necessity of having both exhaust openings and ceiling grilles of adequate size. These curves are plotted from data secured from rating tests in the Fan Testing Laboratory of the Texas Engineering Experiment Station, A. & M. College of Texas, on a 42-inch attic ventilating fan at a speed of 304 RPM, and equipped with a $\frac{1}{3}$ HP motor.

Resistance Cuts Fan Delivery

From these curves it is seen that at free delivery, or zero static pressure, the fan delivers 10,250 CFM while the motor requires a power input of 360 watts. Now, if either or both the exhaust opening or ceiling grille should be so inadequate for the installation that the static pressure or resistance against which the fan operates is 0.12 inch of water, slightly under one-eighth inch, we see that the fan capacity decreases from 10,250 CFM at zero static pressure to only 5,000 CFM at 0.12 inch of water—a 50 per cent decrease in air delivery. At the same time the power input to the fan motor has increased from 360 watts at zero static pressure to 550 watts at 0.12 inch resistance—a 53 per cent increase in power consumption. The full load torque for the one-third

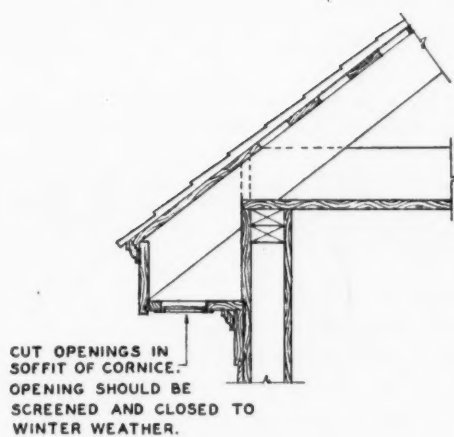


Left—Fig. 30—Wooden louvers in gable wall. Right—Fig. 31—Wooden louvers in dormers. Both are for exhaust.

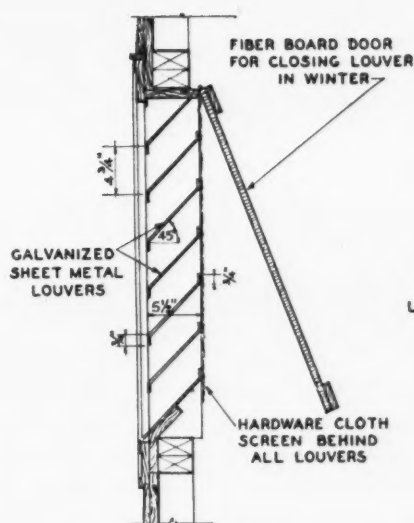


Left—Fig. 32—Metal louvers in a gable wall. Right—Fig. 33—Wooden louvers in gable wall. Both for exhaust. (Dallas Power & Light Co. photo).

CHARACTERISTICS
STANDARD TEST
AND AXIAL FANS
AT 304 RPM
BY
EXPERIMENT STATION
OF TEXAS
IN, TEXAS
1938

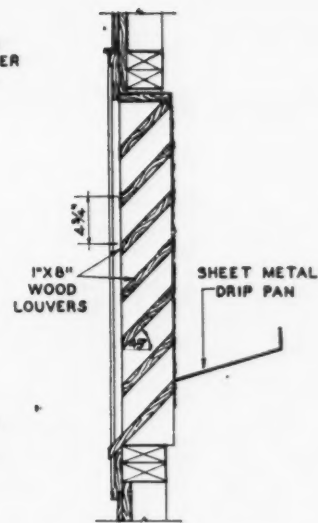


Above—Fig. 34—Detail of construction for a cornice exhaust.



TYPICAL SECTION THRU SHEET METAL LOUVER

EFFECTIVENESS OF METAL LOUVER ABOVE APPROXIMATELY 70%. MAKE LOUVER $1\frac{1}{2}$ TIMES NET FREE AREA REQUIRED.



TYPICAL SECTION THRU WOOD LOUVER

EFFECTIVENESS OF WOOD LOUVER ABOVE APPROXIMATELY 75%. MAKE LOUVER $1\frac{1}{4}$ TIMES NET FREE AREA REQUIRED.

Right—Fig. 35—Typical metal and wood exhaust louvre construction. Note fiber board door to close opening in winter.

horsepower motor with which this fan is equipped is approximately 365 watts. However, the power input required for this fan at 0.12 inch resistance is 550 watts, which exceeds by 50 per cent the full load torque. From these curves it may be seen that as the static pressure or resistance increases from zero or free delivery, the fan capacity decreases, and at the same time the power required to operate the fan motor increases. Therefore, if either grille or exhaust opening is of insufficient size, or if an obstruction in the air stream in front of the fan is encountered, maximum efficiency will not be obtained in the fan's operation, and it is even possible that the motor may be overloaded so that permanent damage results.

Illustrated in Figs. 30, 31, 32, 33, and 34 are common types of attic exhaust openings applicable to most types of houses.

Where louvers are employed, they are usually

constructed of wood, galvanized sheet iron or copper. Metal louvers offer less obstruction to air flow, and consequently their overall size may be less than other types.

In every installation it is necessary to provide a definite amount of free air space in the louver openings so that the air may be expelled from the attic. The free area size, that is, the space between the louver slats, required depends upon the amount of air to be moved and therefore upon the size of the fan. Because of the obstruction to air flow caused by the slats or louvers, which reduce the louver efficiency to less than 100 percent, the total gross area of the louver will be considerable more than the net free area required. Sometimes the net area required for louvers is too great for one opening, and it is necessary to provide two or more outlets. Information regarding efficiencies of various types of louvers and the sizes required will be found in Table IV and Fig. 35.

Porch Exhaust Openings

The porch vent shown in Fig. 36 is increasing rapidly in popularity and is given first choice by many who install attic fans. If it can be used, it is ordinarily the least expensive because it eliminates the necessity of costly work in enlarging gable louvers or constructing dormers. With the porch ceiling exhaust, there is no possibility of driving rains blowing into the attic or disastrous leaks about the flashing. However, when porch vents are used it is necessary during fan operation to close porch windows and doors; otherwise the hot attic air from the vent will be drawn back into the house. For several minutes after the fan in such an installation is turned on, the air expelled from the ceiling exhaust will be unpleasantly warm.

(Continued on page 116)

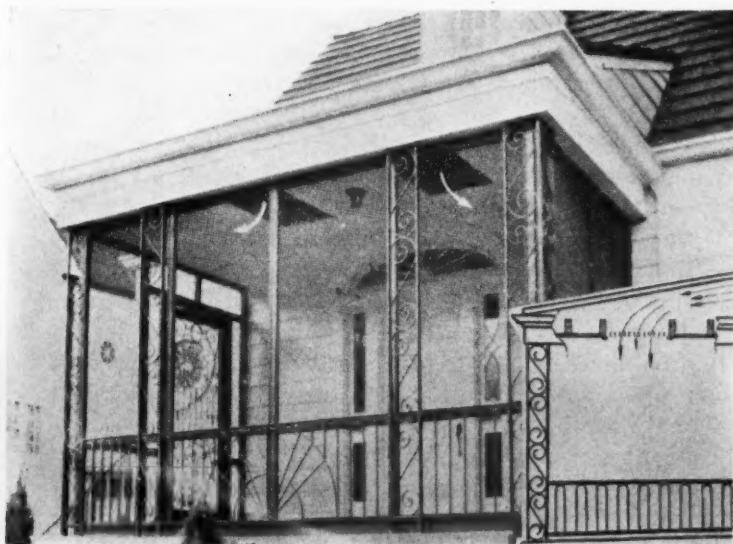


Fig. 36—Sheltered, inside porch ceiling exhaust openings with either wood or metal grille. (New Orleans Public Service Corp. photo).

Proposed New Method for Selecting and Rating Ducts, Fittings, Registers, Grilles For Gravity Systems

Chiefly in the interest of design simplification and a reduction in the number of fittings required the following proposal has been jointly sponsored by the Research Advisory Committee and Installation Codes Committee of the N.W.A.H.&A.C. Ass'n. We suggest a careful study of this important proposal.

By S. Konzo

Special Research Assistant Professor, University of Illinois

IN these critical days of intense activity, when the American people are beginning to face the choice of "guns or butter," it behooves every industry to pause and to consider whether present practices cannot be improved. Every pound of material that goes into a nonessential product, every pound of material that is not used to the best advantage, may be considered in terms of national economy as a waste of resources. Every industry is faced with that problem. Some industries have regulatory restrictions imposed upon them from above. This industry, composed of manufacturers, jobbers, and dealers of warm air furnaces and heat transmitting equipment, is in an excellent position to straighten out its practices and to do it *voluntarily*. I appeal to you in these larger aspects of national economy, as well as from the standpoint of better business practice, to give serious consideration to the proposal which is being presented to you at this time.

Briefly stated, the proposal consists of three distinct parts, all related to the improvement in design and application of gravity warm air heating systems. These three parts consist of:

1. Selected Sizes.
2. Rating of Equipment.
3. Details of Installation.

Part I—Selected Sizes

In the accompanying tables are shown the recommended sizes of ducts, fittings, registers, and grilles for gravity warm air heating systems. All of the sizes specified are in common use; in fact, no odd sizes have been selected. Furthermore, the fact that these sizes have been selected does not imply that any manufacturer cannot fabricate a product not included in this list. The *sole purpose of this report* is to link the various parts compris-

ing a gravity warm air heating system so that when a given size of stack is specified, the sizes of the leader, boot, stackhead, and register are also automatically specified.

We have an existing condition in which a fittings manufacturer is compelled to produce seven different styles of boot fittings for a $3\frac{1}{4}$ x 12 in. stack, with collar sizes of 8, 9, 10, and 12 in. for each style, making in all 28 different sizes and styles of boot fittings to handle a single size of wall stack. Three, or at most four different styles of boots, are sufficient to handle every demand. Only one of the four different collar sizes is the correct size. Hence, it is possible to reduce the number of boot fittings alone from 28 to 4 without in any way interfering with good installational practice. Such a reduction will result in a smaller investment in dies, fewer number of storage bins, less capital investment in stock, quicker delivery, better installation practice, and a reduction in cost. Similar arguments apply to the reduction in the number of stackheads, registers, and grilles.

The combinations, which have been designated as "Units," were not selected by whim or by fancy. The tests made at the Laboratory plant of the University of Illinois have shown conclusively that the *stack is the "bottleneck"* of the warm air side of the system. A given sized stack will give adequate performance *provided* that the leader area, and the register free area are also properly proportioned. The immense amount of test data that have been published, made the task of selecting the proper combination of parts a relatively simple task. In this connection it is the writer's opinion, based on a study of the existing data on all forms of heating systems that we have available more facts and more performance data on the gravity warm air heating system than on any

FIRST STORY WARM AIR DUCTS

Units 1 to 10

Unit No.	Leader Pipe Diam. Inches	Register Size, Inches		
		a	b	c
		Floor	Baseboard Size	Extension
1	8	10x8	10x8	2¼
2	9	12x9	12x8	2¼
3	10	12x10	12x9	3¼
4	12	14x12	13x11	5¼
5	14	16x14	....	..
6	16	18x16	....	..
7	18	20x18	....	..
8	20	24x20	....	..
9	22	24x22	....	..
10	24	24x24	....	..

SECOND STORY WARM AIR DUCTS SINGLE WALL STACKS AND FITTINGS

Units 11 to 20

Unit No.	Leader Pipe Diam. Inches	Stack Size	Register Size, Inches		
			a	b	c
			Floor	Baseboard Size	Sidewall Extension
11	8	10x3¼	10x8	10x8	2¼ 10x8
12	9	12x3¼	12x8	12x8	2¼ 12x8
13	9	13x3¼	14x8	12x8	2¼ 12x8
14	10	14x3¼	14x8	12x8	2¼ 12x8
15	12	12x5¼	...	12x10	3¼
16	12	14x5¼	...	13x11	3¼

other type of heating system, bar none.

The proposal herein presented does not supersede the "Standard Code for Installation of Gravity Warm Air Heating Systems." On the contrary, the sizes selected and the rating of the units should be considered as *practical interpretations* of the Standard Code. The Standard Code is still the standard of the industry. The proposal submitted to you is simply a more practical and workmanlike approach to the same end, namely better gravity heating systems.

Part 2—Rating of Equipment

If we went no further than the proposal submitted in Part 1 on the "Selection of Equipment," the industry will have taken an important step. However, additional steps can be and should be taken at this time to determine complete ratings of the equipment, so that the design and installation of the equipment will be facilitated. Such Rating Tables based on Btu. performance have been prepared although they are not ready for release at this time.

Although the existing Standard Code reduces the plant performance to terms of "square inch of leader pipe," fundamentally the Standard Code is based on "Btu." performance. The suggested procedure is to determine the heat loss from each room directly in terms of Btu. per hr. rather than in terms of leader area. The equation given in the Standard Code can be very simply trans-

SECOND STORY WARM AIR DUCTS DOUBLE WALL STACKS AND FITTINGS

Units 21 to 30

Unit No.	Leader Pipe Diam. Inches	Stack Size, Inches		Register Size, Inches		
		Internal	External	a	b	c
				Floor	Baseboard Size	Sidewall Extension
21	8	2½"x10	3¼"x10½"	10x8	10x8	2¼ 10x8
22	8	3x10	3¾"x10½"	10x8	10x8	2¼ 10x8
23	9	2½"x12	3¼"x12½"	12x8	12x8	2¼ 12x8
24	9	3x12	3¾"x12½"	12x8	12x8	2¼ 12x8

*Commercial sizes vary ⅛ inch from values shown.

RETURN AIR DUCTS

Units 31 to 40

Unit No.	Duct Diam. Inches	Metal Grille Sizes			No. of joists lined	Minimum† depth, inches	When duct is used	
		Choose one					Choose one	
31	12	6x30	8x24	12x14	1	9	6x22	8x16
32	14	8x30	10x24	14x16	1	12	6x28	8x22
33	16	10x30	12x24	....	2	8	8x28	10x22
34	18	12x30	14x24	....	2	10	8x36	10x28
35	20	14x30	18x24	....	2	12.5	10x36	12x30
36	22	18x30	....	....	2	15.0	10x42	12x36
37	24	20x30	....	....	3	10.0	12x42	14x36
					2	18.0		
					3	12.0		

*Based on 14" space between joists.

†Use full depth of joist except when joist depth is less than minimum depth required, when pan must be used.

formed to give results in terms of Btu. per hr. as follows:

$$\text{Leader area, sq. in.} = \left(\frac{\text{Wall}}{F_1} + \frac{\text{Ceiling}}{F_2} + \frac{\text{Glass}}{F_3} + \frac{\text{Floor}}{F_4} + \frac{\text{Cub. Cont.}}{800} \right) (9, 6, \text{ or } 5)$$

$$\text{Heat loss, Btu. per hour} = (\text{Same bracket term}) (1000)$$

The value of 1000 replaces the numbers 9, 6, and 5 regardless of whether the room is on the first, second, or third story. Both equations give results for a 70 deg. F. difference between indoors and outdoors.

In surveying a home for the purpose of designing a layout for a gravity warm air heating system, the heating contractor should list the following information for each room to be heated:

- Room
- 1st, 2nd, or 3rd story
- Btu. per hour heat loss
- Number of 90 degree elbows to be used in the leader.
- Approximate length of leader pipe within 2 feet.

With this information known, it is a simple matter to train even an office stenographer to use the Rating Table and to determine the Unit Number, given in Part 1, that should be used.

Similarly, the return air duct size and grille size, can also be selected from another Rating Table. In this case, diagrams giving the five

(Continued on page 110)

Fire Prevention Measures In Heating and Ventilating Systems

Fire prevention measures have been much in the public eye during May. In heating and ventilating systems, whether in large buildings or residences, certain precautions are necessary if the installation is to be approved by fire prevention officials. These precautionary measures are relatively simple, have long been known, and are omitted only through negligence. The author summarized these measures in an address before the Oregon Fire Chiefs' Association. This article is abstracted from the address.

By Will J. Kollas

Chief Engineer, Montag Stove & Furnace Works, Portland, Oregon

IT IS a matter of coincidence that "oxygen," the very part of air which man, animals and processes need the most is also the supporter of combustion. Since the air supplies oxygen it is evident that air conditioning which deals exclusively with air has a definite relation with fire and fire hazards which of course depend on air supply or oxygen for their action. Without combustion there would be no necessity of firemen or fire service.

Considering the phases of air conditioning in the order of importance, the various steps as applicable to fire service work will be discussed with the most important details being considered. The first is "heating"—the all important branch in the temperate and frigid zones of the earth.

There are three commonly accepted methods of heating, namely: steam, hot water, and warm air. For the different systems wood, coal, coke, oil, gas, or electricity may be the fuel. Steam and hot water systems may be divided into direct or indirect; direct being where the heat interchanger is located directly in the room being heated and indirect where coils in a plenum chamber are used and fans and ducts used to convey the heated air to the various rooms.

The Warm Air Furnace

Warm-air systems usually are considered to be made up of a direct fired furnace and may be either gravity or a forced air system. In either, the heated air is conveyed by ducts but there is a definite difference in the temperature of the air and the quantity. Air temperature for the usual well designed gravity system averages 175° to 200°. In the usual well designed forced air system the register temperatures are 140° or less. It is therefore evident that on the basis of air

temperature a greater fire hazard is present in a gravity system than in a forced air system.

Heating units in themselves may also offer a fire hazard. Some equipment is poorly designed with no thought being given to safety factors. There is also a possibility of the smoke breeching being placed too close to wood work or other combustible material. In this respect the hand fired plant minus all controls is the most dangerous plant because the operator may fill the furnace with fuel and by not setting the draft and dampers entirely neglect the rate of burning.

Modern Warm Air Systems Not Hazardous

In a proper automatically controlled system there is little danger of an over-heated flue or smoke breeching even during cold weather whatever the fuel might be. In a proper controlled system a limit control is installed to cut off the drafts or shut down the equipment in event of overheating the unit. Therefore, the flue or breeching temperature is fully under control.

A large number of the more recent heating units for domestic use are well designed and insulated so that the casings are always cool. With these the distance from wood work is not so important, but of course proper distances between the breeching and combustible material must be maintained.

The condition of a unit may be excellent when installed, but like everything else there comes a time when old age creeps upon it. Sometimes the heating element is in such condition that fire hazards are present and proper repair or complete replacement should not be overlooked.

The second step in complete air conditioning is humidity. This also has a definite relationship with fire and fire hazards. Everyone knows that

forest fires are more easily started and burn more readily when the relative humidity is low. From the same reasoning it is evident that if a building is properly air conditioned with the relative humidity maintained around 35% to 50% there will be less danger of fire and fire hazards. Very little credit has been given to proper humidity control reducing fire hazards but certainly more consideration should be given it.

Forced Air Circulation Problems

The third important phase in air conditioning is air circulation. This branch has probably the greatest relationship to fire service since it comprises the use of fans in connection with ducts between rooms or buildings, the use of natural air flow through ducts between rooms or the providing of air circulation via windows. Since oxygen is necessary to support combustion and since oxygen is supplied by the air it is evident that the manner and degree of air circulation has a definite bearing on fire and fire hazards.

To meet demands of air conditioning standards ducts cannot be eliminated. They are necessary to withdraw foul air, admit and supply fresh air, remove odors, and supply air of the proper temperature, volume, and cleanliness fit for human consumption.

The velocity of air in ducts may vary all the way from 100 to 200 feet per minute in a gravity flow system to 1200 or 1500 feet per minute in a forced air system. It doesn't take long for air traveling at 1000 feet per minute to reach a room after leaving the fan and therefore without proper safeguards the spread of fire, smoke or

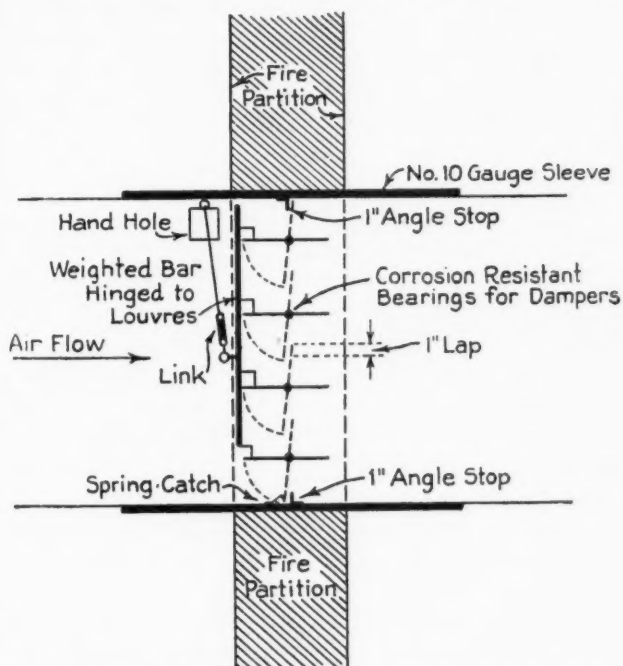


Fig. 6 from N.B.F.U. Bulletin 90 showing louvered type automatic damper suitable for a fresh air intake, in fire partitions, or at junction of a branch from a main vertical duct.

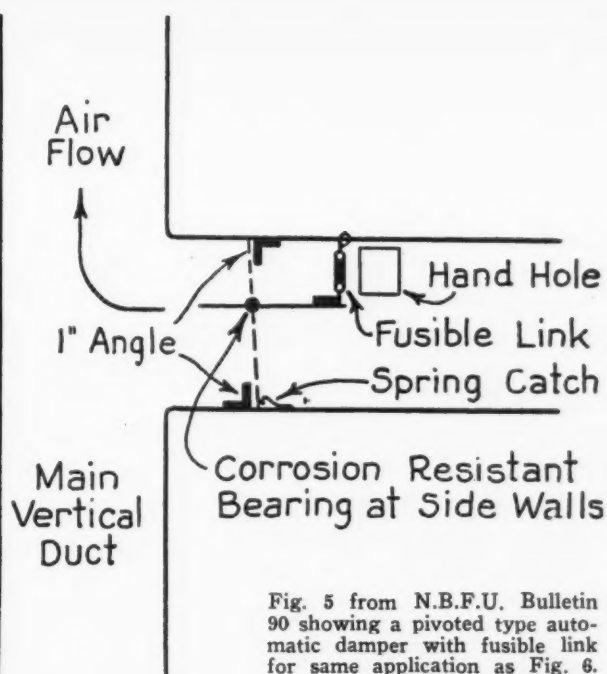


Fig. 5 from N.B.F.U. Bulletin 90 showing a pivoted type automatic damper with fusible link for same application as Fig. 6.

gases through an entire building may be a matter of seconds.

Standard Precautionary Measures

Unprotected horizontal and vertical openings in buildings of any type are a means of rapidly spreading fire. It is also evident that they offer a means of spreading smoke which will at times of large gatherings create panic with possible loss of life. Usually different floors are connected by duct systems and many times one portion of a building is connected to another portion. If fire or smoke occurs in one part it may be transmitted to other parts. It may be well here to consider a few points applicable to proper installation of ducts as applied to commercial installations.

1. Provide the fresh-air intake with a screen and automatic damper. A screen will prevent sparks and burning embers from the outside being drawn into the system. Provide fusible link protection on motor starting switch.
2. Construct ducts of non-combustible materials, preferably metal of gauges as recommended by the American Society of Heating and Ventilating Engineers.
3. If duct linings or coverings are used for insulation or sound absorptive material these should be of material that is non-combustible as is possible to obtain.
4. Provide sufficient cleanout openings in ducts for access in cleaning. Needless to say, ducts having air passing through them twenty-four hours a day will collect dust in certain parts which may be a factor in starting a fire. Therefore this should not be overlooked. A small duct fire may not in itself be dangerous but usually smoke damage to rooms, furnishings or supplies will occur. Also a panic may be created among occupants of an auditorium or meeting hall.
5. Fan rooms should be lined with non-com-

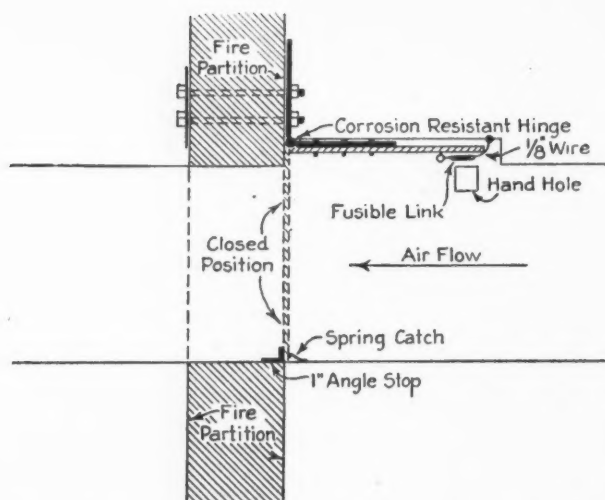


Fig. 4 from N.B.F.U. Bulletin 90 showing an automatic hinged damper for application in a duct passing through a fire wall.

bustible material.

6. If a central system serves several floors in a large building protect each floor by a system of fusible links and cut-off dampers. (Fig. 5.)

7. Allow no material to be stored in the fan or fire room and see to it that oil used on the fan and motor is not allowed to accumulate on the floor.

8. Keep an accumulation of dust and lint off the motor, especially if it is not a totally enclosed one.

9. Remote control systems to shut down a system are good features since air is necessary for good combustion and a fire starting in a room properly ventilated will burn more readily than in a poorly ventilated space.

10. Where ducts pass through fire walls automatic dampers controlled by fusible links should be provided. Naturally, ducts passing through fire walls should be discouraged but sometimes it is necessary to accomplish certain desired results. (Fig. 4 and 6.)

NBFU Bulletins

There are other points which are thoroughly covered by the "Regulations of the National Board of Fire Underwriters for the Installation of Air Conditioning, Warm-Air Heating, Air Cooling and Ventilating Systems" as well as "Regulations for Blower and Exhaust Systems for Dust, Stock and Vapor Removal." These are clearly pointed out in their Bulletins No. 90 and 91 and are quite complete. If the suggestions set forth in these regulations are followed fire hazards presented by air conditioning systems would be definitely minimized.

The fourth important phase of air conditioning is air cleaning. This has come to be a definite part of a complete air conditioning system especially in large cities in industrial sections. Air cleaning is accomplished by either washing,

filtering or electrical precipitation. To give an idea of the need of air cleaning it may be well to cite some data with reference to the quantity of dirt in the air.

The Problem of Dust and Soot

It has been estimated that during most months from eight to ten tons of dust are suspended over New York City alone. In the City of Pittsburgh tests have shown that 1950 tons of soot per square mile fall each month. Other estimated monthly soot falls for several large cities are: Baltimore, 1530 tons, Chicago, 1450 tons; St. Louis, 600 tons, New York City 370 tons. When we consider that 50 pounds of carbon and ash leave the chimney for every ton of coal burned one can easily see why these cities have so much dirt in the air.

Tests have shown that the greatest constituent that goes to make up atmospheric dust is soot. It is most objectionable since it damages and destroys and cannot be removed by air washers. Wetting with water has very little effect on intercepting soot particles in the air and since all dust, including soot is susceptible to wetting by oil the filter having an oily viscous coating in the filtering medium has come into use. Since most filters are now coated with oil or have oil compounds used in one way or another their relation to fire hazards can be easily seen. In the past many filters on the market have been quite inflammable. There have been cases where fires have been started by filters and since the material which collects in a filter is combustible it is essential that the filter itself should be made of material that does not burn readily. The medium should not give off large volumes of smoke nor gases if for some reason it does burn. The oily viscous coating should also have a high flash point preferably 350° F or higher.

Filter Hazard Can Be Minimized

The manner in which filters are installed is also of importance. Some direct fired units having filters installed in them are of such design that control failure could cause a fire. Those having filters installed close to and in the same compartment with large heating surface areas are dangerous and if for some reason control failure would allow the unit to become overheated the filters could present a fire hazard.

Where large banks of filters are used such as are normally installed in commercial air conditioning systems it is well to install a fire sprinkling system in connection with fire control.

Recently the Underwriters Laboratory Inc. have set up testing equipment specifically for filters with reference to their hazard for fire

(Continued on page 124)

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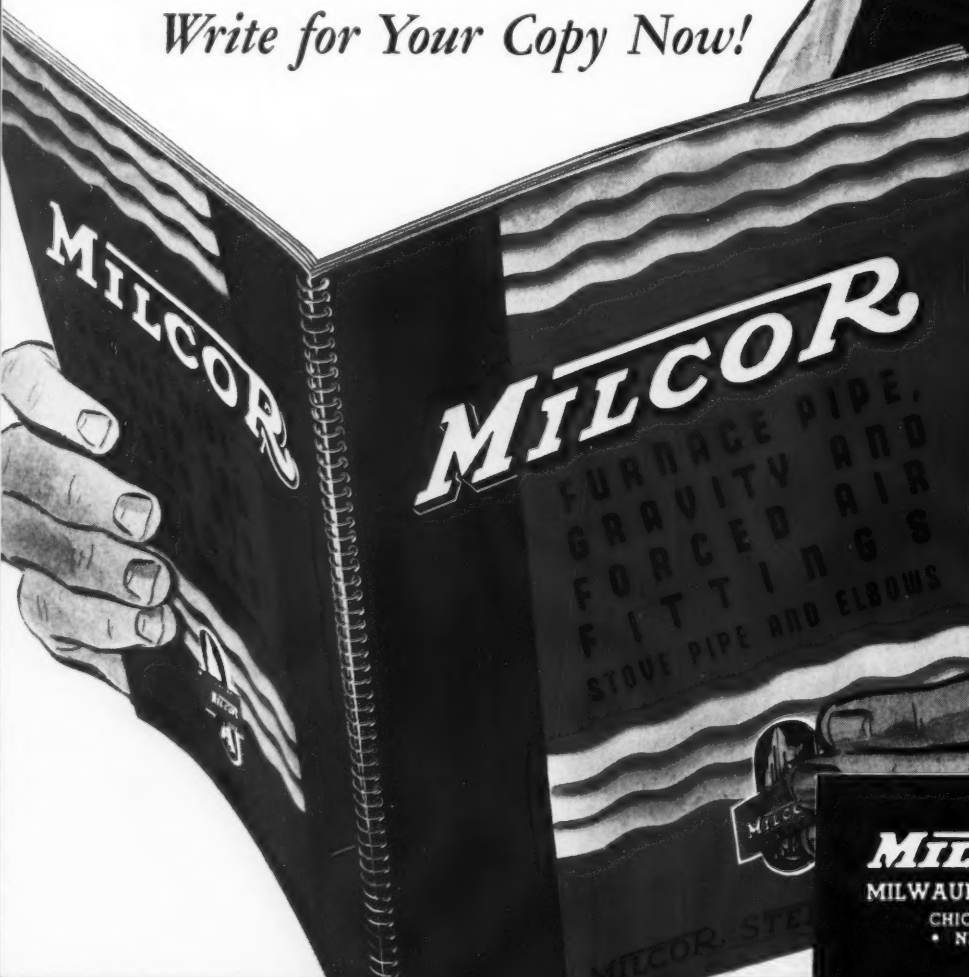
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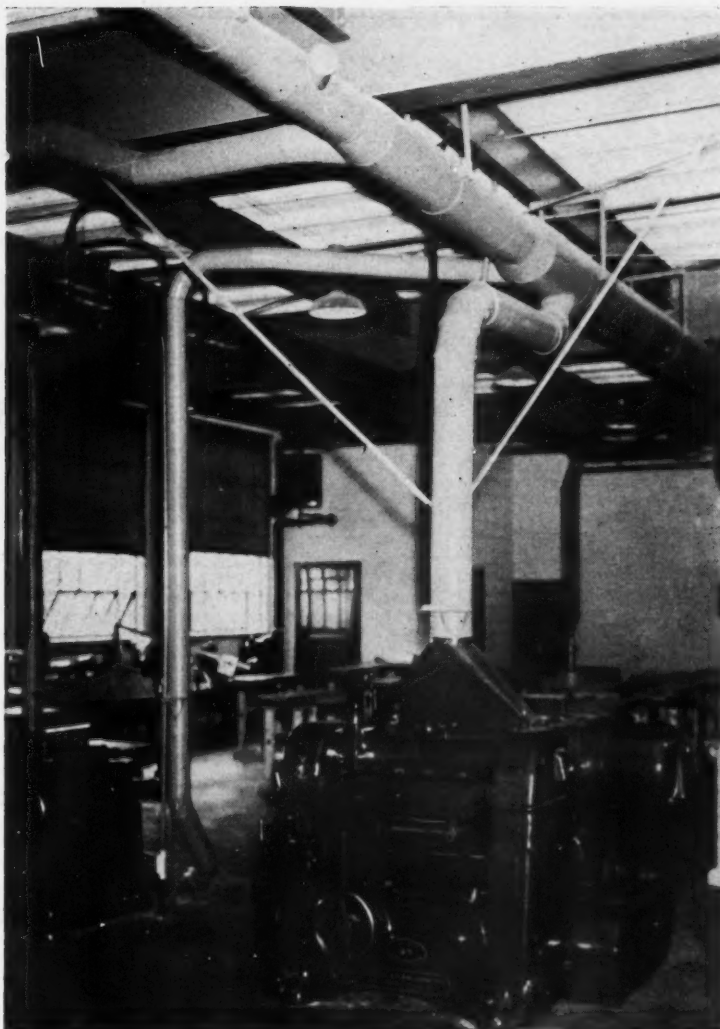
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Left—Closeup of piping at surfacer and jointer (see diagram on next page) and, below—exhauster in wood working shop showing special platform for fan and motor. Note special pipe hangers, branch and main connections and general neatness of installation. A layout of equipment and details of interesting features are shown in a drawing on the following page.



Dust Collecting System For a School Shop

IN the wood working and pattern shops of the West Senior High School, Rockford, Illinois, contractor Alga Reece, Rockford, some months ago installed the dust and shavings collecting system shown in the drawings and photographs. The equipment used for training comprises the latest types of sander, saws, jointer, surfacer, etc., and the collecting system is a completely self-contained installation with above-roof collector and waste hopper.

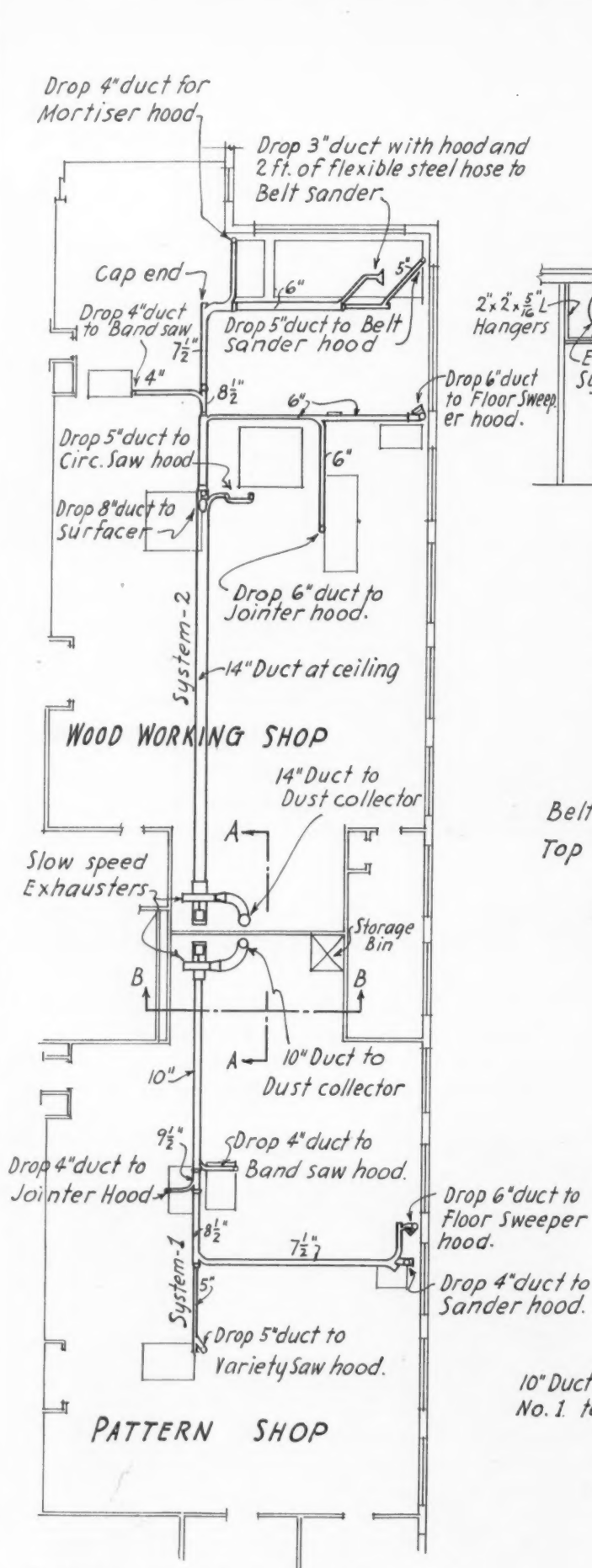
An identical system was also fabricated and installed by Contractor Reece in the East Senior High School at the same time.

There are two collecting systems running into the single collector mounted on the roof above the shops. One system with exhauster serves the wood working shop; the second serves the pattern shop. The exhauster for each system is suspended from the ceiling in the shop served.

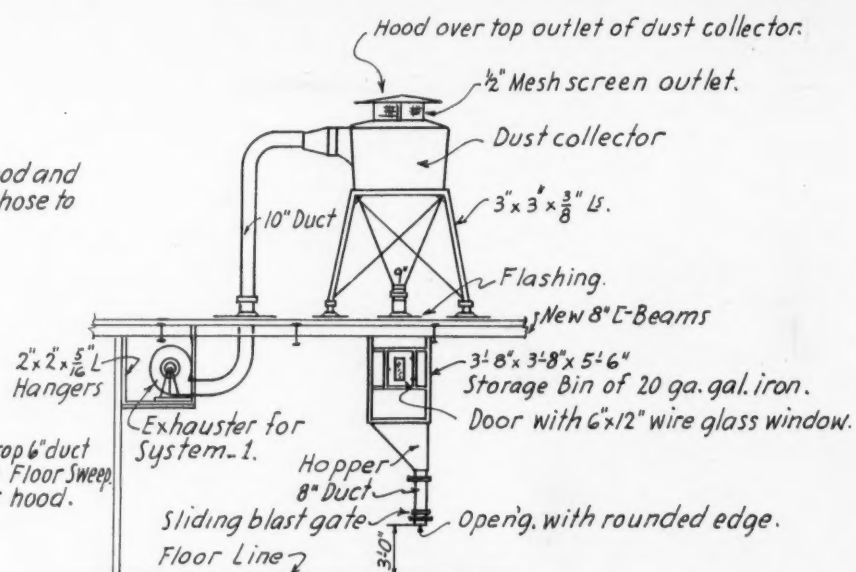
Machine hoods came with machines; contractor Reece had to lay out and connect a round pipe system of branches and mains as shown in the plan and provide in each branch, close to the hood,

a suitable blast gate and the necessary elbows, fittings and supports. Mains were run as close to the ceiling as the structural framing permitted.

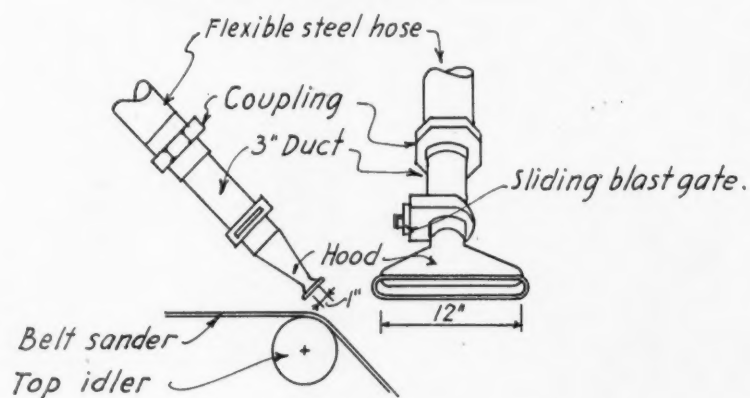




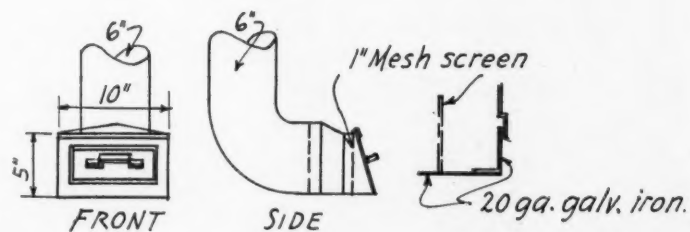
TYPICAL FLOOR PLAN OF
PATTERN & WOOD WORKING SHOPS



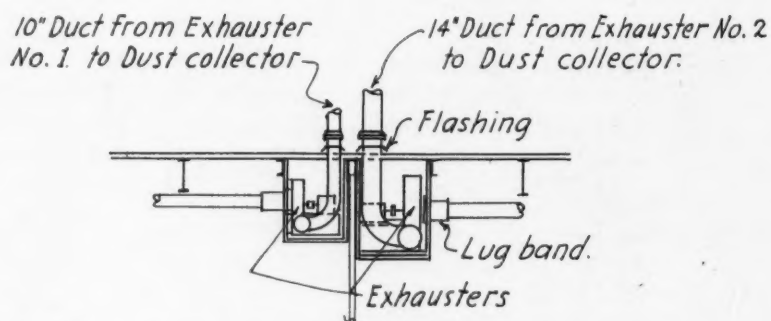
ELEVATION AT B-B



DETAIL OF HOOD FOR TOP IDLER
OF BELT SANDER



DETAIL OF FLOOR SWEEPER HOOD

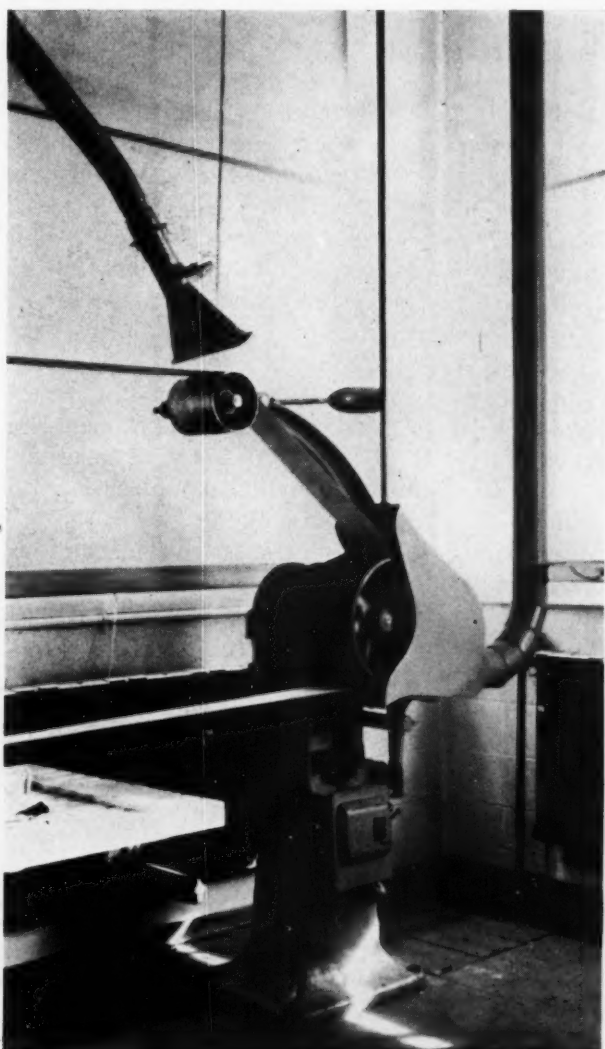


ELEVATION AT A-A

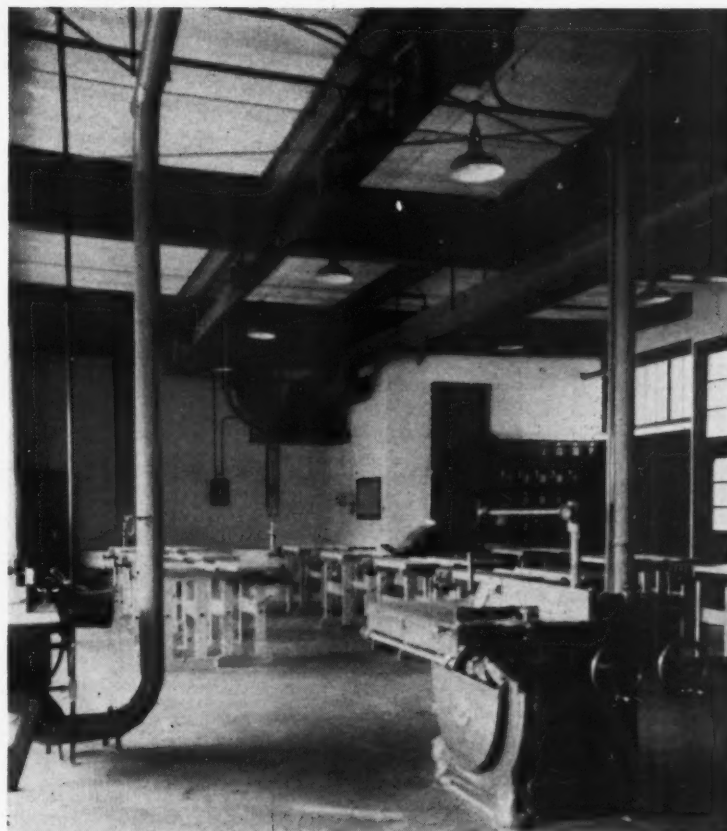
The mains and branches were supported from the roof construction at 7-foot intervals with wrought iron hangers (see photographs). Connection between mains and fan intakes is a removable collar with lug bands to facilitate inspection. The end of each main is a stub with an air tight cap, also for inspection. Elbows and turns in mains and branches have a radius of not less than $1\frac{1}{2}$ times the pipe diameter. Cleanout doors were also located along mains as shown in the drawing.

Construction of Piping and Hoods

Branches, so far as possible, were held against the ceiling until directly above the machine hood and then dropped straight down. All joints are lapped, riveted and soldered in the direction of air flow. Where branches join the main, the main was increased in size to hold a constant velocity. Gauges were—up to 8-inch diameter, 24 gauge; 9 inches to 14 inches, 22 gauge; over 14 inches,



The belt sander idler pulley hood was made by Reece as shown in the drawing facing and pictured above. The hood branch is flexible steel hose to provide adjustment.



Where branches connect to hoods near the floor the elbow and hood stub were strapped off the floor as shown at the left. Upper machine hoods were connected as shown at the left machine.

20 gauge. Galvanized iron finished with two coats of machine enamel was used.

Contractor Reece had to furnish six hoods not supplied with machines. These consist of the two special hoods for the belt sander idler pulleys and are shown in a detail. The four floor sweep hoods were made as shown in another detail and were securely fastened to the floor by strap supports. The belt sander hoods and the floor sweep hoods were all made in the Reece shop.

Exhauster Details

The mill type exhauster for the wood working shop has an outlet velocity of 4,000 fpm, 4,270 cfm, against 6 inches S P with 5.59 B.H.P. The exhauster for the pattern shop has an outlet velocity of 4,000 fpm, 2,180 cfm, against 6 inches S P, with 2.86 B.H.P. Both exhausters are mounted on special platforms as shown in one photograph and in a detail. The platform consists of a frame of 2 x 2 by $\frac{3}{8}$ -inch angles in which is laid a 2-inch plank floor, then a 2-inch cork mat held in a steel band frame and on top another 2-inch plank floor to which the exhauster and motor are fastened.

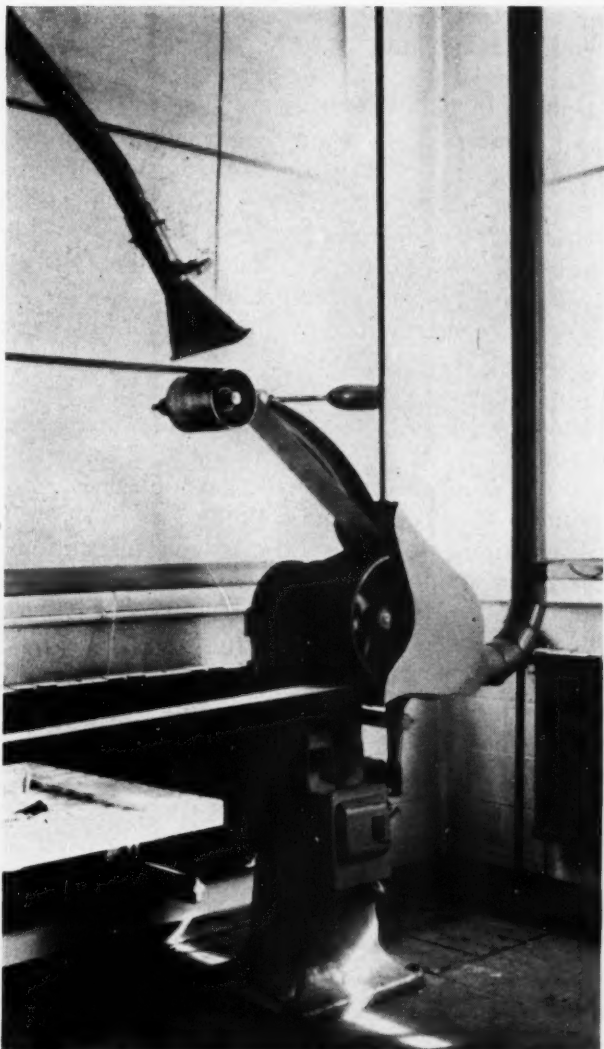
The dust collector and framing on the roof is of standard low pressure design built complete by Reece. An 18-inch inlet to which the 10- and 14-inch lines from the exhausters connect as shown in the drawing. Air is vented from the

(Continued on page 117)

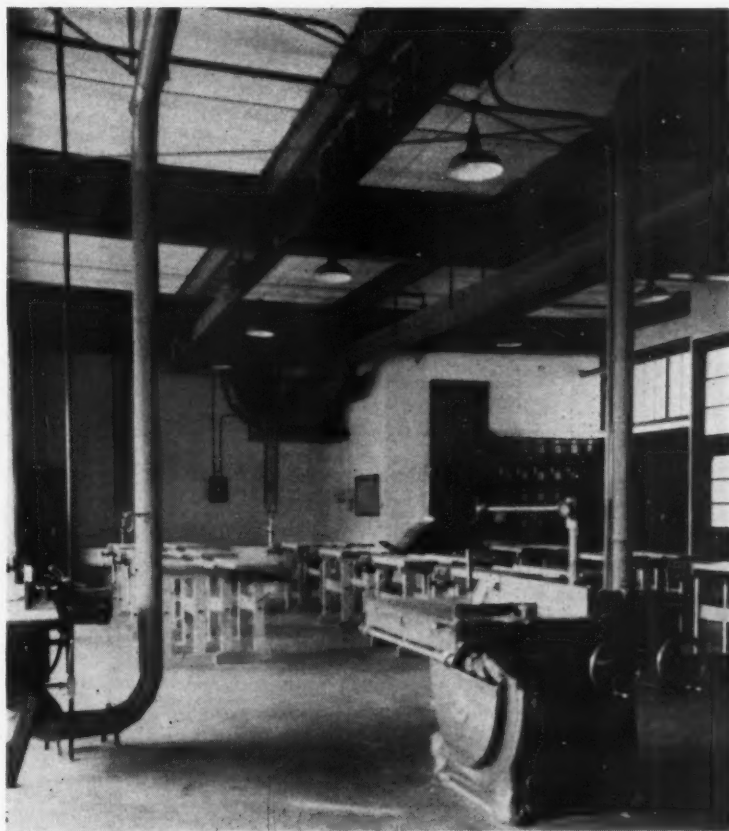
The mains and branches were supported from the roof construction at 7-foot intervals with wrought iron hangers (see photographs). Connection between mains and fan intakes is a removable collar with lug bands to facilitate inspection. The end of each main is a stub with an air tight cap, also for inspection. Elbows and turns in mains and branches have a radius of not less than $1\frac{1}{2}$ times the pipe diameter. Cleanout doors were also located along mains as shown in the drawing.

Construction of Piping and Hoods

Branches, so far as possible, were held against the ceiling until directly above the machine hood and then dropped straight down. All joints are lapped, riveted and soldered in the direction of air flow. Where branches join the main, the main was increased in size to hold a constant velocity. Gauges were—up to 8-inch diameter, 24 gauge; 9 inches to 14 inches, 22 gauge; over 14 inches,



The belt sander idler pulley hood was made by Reece as shown in the drawing facing and pictured above. The hood branch is flexible steel hose to provide adjustment.



Where branches connect to hoods near the floor the elbow and hood stub were strapped off the floor as shown at the left. Upper machine hoods were connected as shown at the left machine.

20 gauge. Galvanized iron finished with two coats of machine enamel was used.

Contractor Reece had to furnish six hoods not supplied with machines. These consist of the two special hoods for the belt sander idler pulleys and are shown in a detail. The four floor sweep hoods were made as shown in another detail and were securely fastened to the floor by strap supports. The belt sander hoods and the floor sweep hoods were all made in the Reece shop.

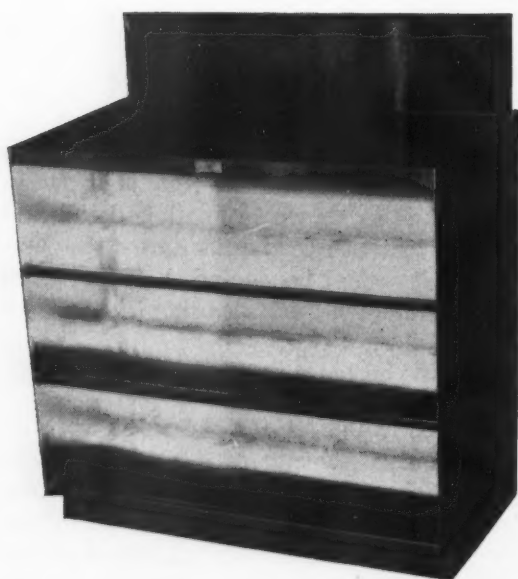
Exhauster Details

The mill type exhauster for the wood working shop has an outlet velocity of 4,000 fpm, 4,270 cfm, against 6 inches S P with 5.59 B.H.P. The exhauster for the pattern shop has an outlet velocity of 4,000 fpm, 2,180 cfm, against 6 inches S P, with 2.86 B.H.P. Both exhausters are mounted on special platforms as shown in one photograph and in a detail. The platform consists of a frame of 2 x 2 by $\frac{3}{8}$ -inch angles in which is laid a 2-inch plank floor, then a 2-inch cork mat held in a steel band frame and on top another 2-inch plank floor to which the exhauster and motor are fastened.

The dust collector and framing on the roof is of standard low pressure design built complete by Reece. An 18-inch inlet to which the 10- and 14-inch lines from the exhausters connect as shown in the drawing. Air is vented from the

(Continued on page-117)

Stainless Steel, Stainless Clad, and Galvanized Iron Kitchen and Fountain Equipment



"SINKS OF DISTINCTION" is the motto of Just Manufacturing Company, Chicago, who, for seven years, have been manufacturing custom built sinks and cabinet tops for residential, industrial and commercial customers.

These custom built products are marketed under the trade name "Justline" under which there is a deluxe and standard construction. Design is identical in both constructions, but the material used is different. In deluxe construction 16 gauge, 18-8 stainless steel in number 4 satin finish is used. In the standard line (under trade name Miraclad) a 16-gauge clad steel is offered at a slightly lower cost and with bowls soldered to the drainboard instead of spot and seam welded as in deluxe construction.

A third type of sink is now in production, called Linoclad to indicate a linoleum surface cemented to a 16-gauge steel plate and trimmed around the bowl lip, around all edges, at the intersection of drainboard and back splasher with stainless steel edging and molding.

For kitchens of restaurants and institutions there is also offered low-cost galvanized iron scullery sinks of single or double bowl types, built to special order to fit spaces allotted.

Just Manufacturing Company has another source of business—accounting for a very large

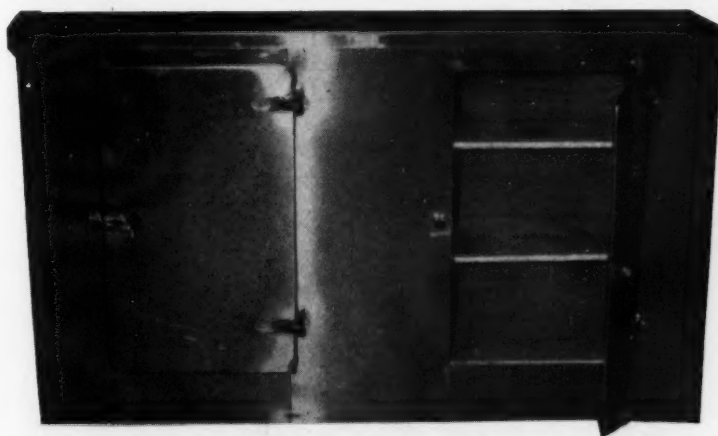
From top to bottom—Sandwich board with wood cutting surface, cold and hot receptical wells in 22 gauge Monel top; cabinet, drawers and bins are aluminum painted galvanized iron. Open work table with 16 gauge stainless steel top; galvanized pipe legs (1 1/4 inch) and rack made of soldered 2 by 1/2-inch strap iron galvanized after assembly. Coffee service cabinet of 16 gauge stainless steel throughout, because unit stands free; note raised rim on top. Seven foot, 12 gauge, black iron, double drainboard scullery sink, arc welded. Complete unit is dipped after assembly to get an unbroken galvanized coating.



Sinks are sound deadened after assembly by spraying all over the bottom a heavy coating of sound deadening material. Note stiffening ribs under drainboards.

volume month after month. This is the fabrication of complete soda fountain and lunch bar equipment for one of the country's largest drug store chains. For this customer, Just fabricates complete units, as the photographs show, each unit designed according to an equipment plan furnished by the buyer.

These drug store units are made of galvanized iron, stainless and clad and combinations of these materials depending on where the unit fits into the complete installation. In these units, Just furnishes shelves, drawers, doors, hardware as well as cabinets and tops. Just does not install



Dry back bar for non-cooled food with 16 gauge Ingaclad top and front welded, ground and polished. Cabinet sides, back and shelves are galvanized iron, 18 gauge. Frame braced with tie rods.

these chain store assemblies, but each store assembly is erected in the shop prior to shipment to see that the assembly will fit into the dimensions furnished.

Construction of Justline and drug chain units is constantly being improved. For example, the sink top of stainless steel employs a drainboard formed in a single piece on one of the largest presses in the Chicago area. The top is blanked and formed; the raised rim is formed and edged; seams are electrically welded and then ground and polished with flexible shaft machines.

Sink bowls with flat or radius bottoms are cut, formed and welded. The bowls are then spot welded to the drainboard and either soldered or welded continuously depending on whether the sink is deluxe or standard. Clad material sinks can not be welded, but are soldered.

Just has developed a reinforcing and sound deadening technique which produces a rigid, sound free surface. Two "U" shaped ribs are welded through the length of the under side of the drainboard to provide requisite stiffness. Then the whole under side, including the bowl is heavily coated with an approved fireproof sound deadening material sprayed on by a pressure gun.

When the sink is complete it is fitted to a suitable wood frame which facilitates fastening to either wood or steel cabinets.

Just has popularized the grooveless sink top



Double-walled refrigerator cabinet being assembled. Wall space packed with insulation. Frame standing on edge will support door hardware. Note spacer rods which hold door frame away from cabinet for insulation space.

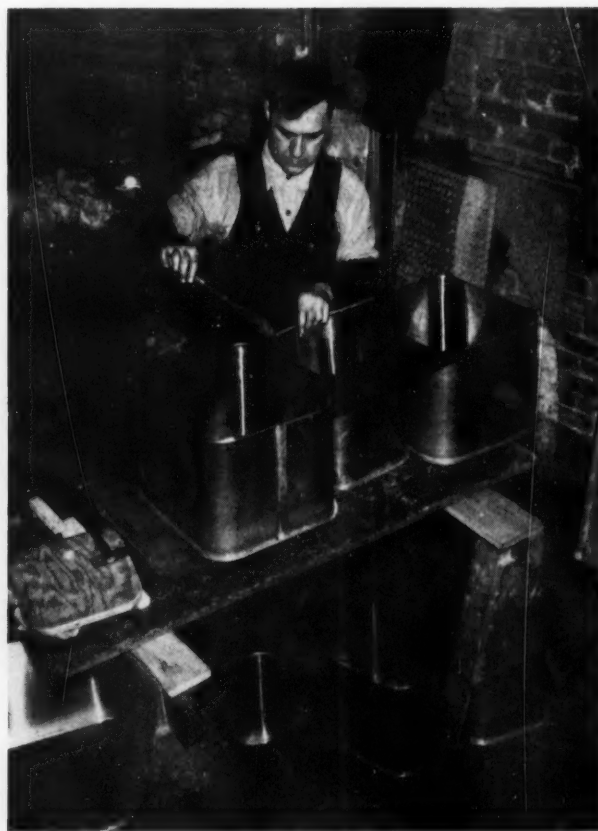


Above, left—Welding a stainless steel ventilating hood which will go above a work surface. Right—All materials used in Just equipment is cut and squared on this power shear.

which eliminates channels which may be hard to clean and polish and which cause tipping of small bottom glass ware. The Just idea is a smooth surface with a double pitch—from back and front inward to the center line and from end inward to the bowl. Just has also favored the rounded, seamless construction which eliminates all hard to clean corners.

In the galvanized iron scullery sinks Just has

Below—Stainless steel work surface being ground and polished after welding. In foreground is a fountain assembly erected to check fit. Below, right—Soldering flat bottomed, 22-gauge Monel sink bowls. Flat bottomed bowls are formed by Just.



Organizing the Class for

"Streamlined" Sheet Metal Training

By Ernest E. Zideck

Instructor, Technical School, Jackson, Michigan

IN realization of the fact that more and more of the instructors in sheet metal work are being drafted from the ranks of former shop owners and sheet metal men of long standing who, however, have had no previous teaching experience and are, on that account, handicapped in the inauguration and the conduct of a successful teaching program; and prompted by inquiries from men certified for instructors under the National Defense Program for an Outline of an Instruction Course adaptable under the emergency; I am only too glad to have obtained the cooperation of the editors of the *AMERICAN ARTISAN* for the purpose of submitting to such instructors suggestions, based on my own experience.

"Work-a-Day" Practice Should Be Keynote

The very first consideration of the emergency program instructor should be to prepare the men entrusted to his charge for doing useful work in the sheet metal line. The preparation must be both intellectual and in actual performance of the tasks. The instructor, having practical shop experience and knowing what kind of work and how much of it, a man should be able to perform to be considered a useful worker, should be primarily led by that consideration. There is no point in teaching a young man a trade, unless the young man thereby becomes fitted to step into a shop and do satisfactory work. The instructor, in short, should abandon the attitude that the student's status is something entirely apart from our work-a-day world and that his studies are somehow not related to the doing of useful work. That attitude should be dismissed and a common sense understanding of "work and wages" should take its place.

In the production of goods—be they sheet metal or other goods—three factors are all important: the raw materials, the tools, and the labor. The man learning a trade—thereby acquiring a fitness to convert, by the use of tools, a raw material into a finished product, should obviously be acquainted with the materials;

taught the use of the tools; and made fit, mentally and physically, to perform the labor that converts the material into the finished product. All else, in teaching a trade, is highly superfluous and detrimental to the object in view, namely, the making out of a green student, by teaching him, a producer of goods.

There are in the sheet metal line, as in any other trade or profession, highly remunerative and commonly called "easy" jobs. There is the designer of goods, the engineer of production, the superintendent of production. But just as it is impossible to become a highly paid executive by mere pretending, so is it nonsensical to think that the above production positions may be attained without learning everything and learning it right.

It is comparatively easy for a thorough sheet metal man with an additional gift of original and applicable ideas to work himself up to a designer of new sheet metal products. A thorough sheet metal man versed in all phases of the work, of tools and machinery and of work methods, may become a production engineer or, if good at figures and organization and the handling of men, can become manager or superintendent. But the pre-requisite in all the cases is the knowledge of the work and the ability to do it and make others do it.

Weed Out Those "Too Good" to Work

Under the present emergency training program financed by the nation we can not expect to educate the young men for positions of engineers, designers, managers and such like. These positions may be attained by the men, in time, if they study and become fitted by such study and experience. But the student who deems himself too good for a "mere worker" should be immediately dismissed from the class. It is useless to train him to do "merely work." Such students are a constant irritation to the instructor and a bad influence in the classroom or shop.

On the other hand there are plenty of young and older men eager to learn enough to go out

and earn a living by pursuing a trade. The sheet metal class should be organized of such men. With them the instructor will have no trouble and the class, no matter of what duration, will prove a success.

Materials, Machines, Production

As to the actual Course of Instruction, the outline has been given above: 1—the acquaintance of the student with the materials; 2—his becoming familiar with the tools and the machines; and, 3—his induction into the art of using the material and the tool with the object in view of producing the goods.

Accordingly, the instructor may start out with the teaching of the metals, their properties, their gauges, their adaptability or prevalent use for this or that work. He may continue with the teaching of the tools, their handling, the machinery and its uses. He may demonstrate, progressively, the uses of the metals and of tools and of machines. He may then advance to the task of letting the students handle the materials and the tools and the machines. He soon will discover which of the young men are best at transferring to metal an idea or a plan or a prepared layout; which are more interested and handy in shearing the metal, provisioning it, forming it, fitting it, doing the joining and the final touches.

Group Instruction Saves Time

Always bearing in mind that the time allotted for training the men is not enough to teach them the whole trade and that the students are not uniformly fit for all types of work; and, moreover, that in the up-to-date shop the men will not be required or given the opportunity to perform individually all the tasks; the instructor must divide the class into a number of groups, each group doing such work as best fitted for. One group may do the preparations for cutting up the metal; another group shearing-cutting the metal; a third notching and otherwise provisioning the blanks; a fourth braking-forming; a fifth fitting them for joining; a sixth group doing the joining; and the seventh group doing the final touching up.

The groups may consist of any number of men; as few as seven students may be taught under the group system plan—one of the students doing the preparatory task, one other shearing, the third provisioning, the fourth braking-forming, the fifth fitting, the sixth joining and the seventh finishing. Obviously, a number of identical items must be worked on at the time. The items may be anything, from drinking cups to miniature house constructions done in sheet metal. Much preparatory work must be done by the instructor in laying out the various parts for patterns by which the students would be required to work.

But once he has done the preparation he will be at ease, free to step from group to group and supervise and correct; and teach the more intricate operations, such as soldering, double seaming, brazing or welding.

The instructor should at all times bear in mind that he must instruct so as to insure the trainee's fitness for certain work or performance. The trainee will not, after he leaves school, construct drinking cups or build sheet metal houses. More likely, he will be required to man a machine or be posted at the fitter's and assembler's bench for work, handling parts and assemblies on which many men will work or have worked.

Proper Shearing Means Proper Fit

In any kind of volume production in sheet metal, granted that the article manufactured consists of many separate parts, it is not the man versed in the expert handling of tools and producing neat work by his hands who is most important. Rather, aside from proper layout, it is the shear man and the brake operator whose work is of utmost consequence. If parts are sheared wrong, the braking-forming of them by gauge setting must be wrong, and then it would be difficult for the best of sheet metal mechanics to make the parts fit and produce enough goods to pay their wages.

With the pattern correct in every detail and the blanks sheared and braked-formed right, there is little fitting to be done. The parts simply "fit." The student should be made to understand the importance of these, commonly regarded as inferior, machine operations. The man trained for a shear man has much to be taught. The adjusting of the machine, the setting of gauges, the use of auxiliary gauges in shearing other than on parallel lines, the handling of the sheets to obtain as many blanks as possible from the standard size, to manipulate the metal without cutting his hands and scratching the surface of the sheets.

Brake Operation a Large Subject

This also applies, in a possibly greater degree, to the brake operator. He must be taught all the intricacies of the brake adjustment, the use of gauges, making of sharp or radial brakes, the various degrees of brakes. Practically all press-brake performances can be duplicated on the hand brake, especially so if it be a box brake. There are dozens of different braking results, obtainable working a brake intelligently, and the student should be taught to know them all and efficiently perform each. Obviously the instructor, in making a design and laying out parts for a construction, must take into consideration what can and what can not be accomplished by means of machines and tools in the class room or the

school's sheet metal shop. It would not do to plan a construction that could not, effectively, be done by means at hand. The instructor, in short, must be a production engineer on a small scale, knowing the facilities at his command and planning such modes of construction as may be executed without difficulty by whatever equipment is available.

Teach by Letting Students Do Things

In the beginning of the class the instructor will be confronted with the difficult task of assigning work to, and keeping busy, the twenty odd students helplessly clustering about him. If it be lecturing alone by which he could teach the men to work, then the problem would be solved by imitating the grade school practice: seating the students and telling them things and then asking questions or letting them come, one by one, to the blackboard, demonstrating. But this kind of instructing will not appeal to the students. Most of them have just quit school, and are fed up with listening to the teacher and answering questions.

A trade instructor must apply other means. Men learn by experience. Let them be confronted with a task. Then each one of them will eagerly seek information and ways and means by which to accomplish the task. If a student needs to measure by thirty-seconds of an inch, he will learn the readings on the ruler or the scale in no time. Let him do a work in which he sees the difference between a 22 and a 16 gauge and he will speedily learn to distinguish between gauges. Students learn willingly the secrets of the trade when *needing to know them*—and learn little by listening to the instructor.

Minimize Boreome Lectures

The above does not preclude information being given by lecture. But this information must be *sought* by the students; it will be sought when the students are submerged in work problems and seek a way to overcome the difficulties which they encounter. Then it is opportune for the instructor, at or near the close of the daily instruction hours, to invite the students to their seats to ask questions.

In organizing a beginner's class the instructor may proceed as follows: if he be a good talker, he may inaugurate the class by talking about the trade, its growth, its opportunities, its methods of doing work, the machines and the tools used in doing the work. He may talk informally to the students, leading them about the shop, showing them the materials, the machines, the tools, and explaining their uses. By the time he has finished his talking and showing and explaining, he will have observed certain of the students, not

necessarily the most conspicuous, lingering about a machine or trying out a tool or otherwise showing interest in the proceedings. He may select from among these vividly interested students a few and give them tasks to do, select certain gauges from among the sheets, measure off a few blanks, try the squaring shears, try to brake small pieces. Each of the so formed groups should comprise two or three of the less interested students. The instructor will find that, if he assigns four students to the preparation of blanks, four others to shearing-cutting, four or five to hand-notching and other provisioning, four to fitting-joining of the parts and so forth, there will within a week arise in each of the groups a *leader*, telling the others what to do and how to do it, and the others in the group listening and obeying; and thus naturally a group system will emerge in the class room which the instructor should, for his own good, foster.

Leaders Should Be Chosen by Merit

A group system in the class room aids the instructor insofar as he needs to deal with the leaders only, telling them and showing them instead of telling and showing each student separately. There undoubtedly will be a few of the students rebelling, coming to the instructor for information or demonstration, instead of taking the leader for granted. In these cases the instructor will do well to offer the rebels the leadership in the group or groups, smilingly explaining that anyone knowing more or doing the work better than the existing leader should immediately step into his shoes, leading the group. Merit alone should determine who is to be the leader.

Group Instruction Only Method

The class comprising twenty or more students can not be instructed adequately with each student depending for information and demonstration on the instructor. The equipment will not allow for mass instruction, one at a time, of the dozens of operations or tasks. Only a limited number of the students may be seated at the drawing or layout table, learning the preparatory tasks. Only a few of the students can be posted at the shears or the brake or use the bench for fitting-joining. And the instructor, obviously, can not be at various places simultaneously. The group-system, therefore, remains the only practical solution of the teaching problem in a sheet metal class room.

One other point is of utmost importance. The students should be taught *by producing useful things*. A routine of cutting up sheets into pieces to practice braking-forming at random and junking the pieces quickly kills interest.

Copper Roofs Can't Be Waterproofed By Smearing on Compounds

By Lawrence E. Gichner
Gichner, Inc., Washington, D. C.

A CANCER can't be cured by dashing on talcum powder. Neither can a copper roof be water-proofed by smearing on cement compounds.

Cancer is treated by cutting out the malignant growth. By following the same principle, faulty roofs can be reconditioned.

First we must get down to the fundamental facts of the failure and then slice them out. Nothing else will be enduring.

All the truth on the whole subject of copper roof repairing is written right in the above three brief paragraphs. Amazingly simple, yet these truths are disregarded with startling flagrancy.

For proof of the ruinous effect of surface dabblings glance over the accompanying illustrations. These are copper roofs that caused trouble. Not once, but twice. The second time after repairs were made.

In old hokum days of patent medicines, salesmen used to put on a street show to attract the susceptible. Today in roofing the scheme is the same, but the bait a little different. Instead of rattle snakes, dancing negroes or painted Indians, a dressed up, flashy, guarantee is used as a "come-on."

No product is better than the company behind it; and as a rule, no first rate company needs gaudy paper proof of its integrity or of its prod-

uct. However, people are vulnerable for guarantees.

Salesmen, ignorant of the chemical composition of the product they are selling, praise its enduring quality with such professional glibness that the astute as well as the gullible are deceived.

"Apply this black roof coating, which we guarantee for . . . years, and you can forget your leak problem for a long time," a salesman told the building committee of a large church.

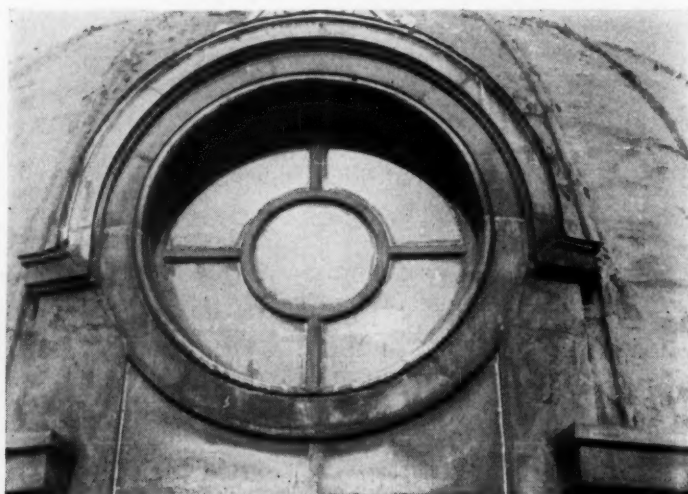
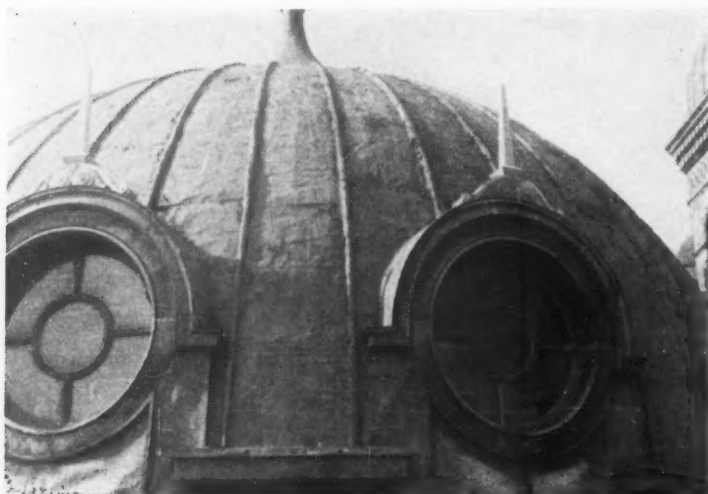
The church applied barrels of the black roof coating. It improved the roof, yes, but how? In reverse, for now it leaks more than ever before.

Even the expensive copper dome portion of the roof was caked and coated. Copper never rusts and should never be painted. Within time, the elements do their share in covering copper with a protective coating of patina.

Two years later the committee called our firm. What could be done? We immediately set men to work to remove as much of the ruinous dope as possible and to repair the damage done through this erroneous process.

The committee has the salesman's ten year guarantee. The paper on which it is written has seals and decorations, yes. But what of the salesman? Where is he?

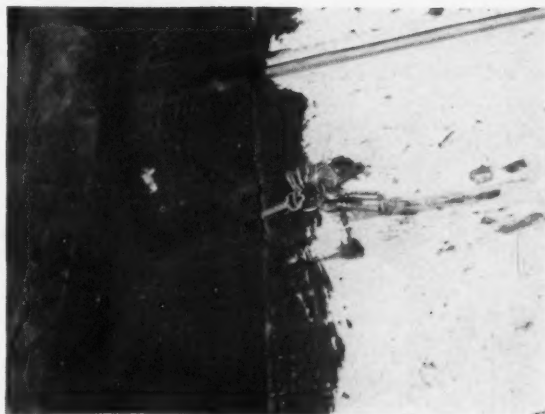
Evidently gone with the wind.



Left—Expensive copper roof covered with plastic which soon peeled as shown. Right—Closeup of same roof showing clearly instability of plastic and failure of this scheme to waterproof the roof.



Top, left—The ends of the battens are lower than the edge of gutter so that when the gutter filled water ran into battens and so into building. Top, right—The compound supposed to waterproof sagged in hot weather, exposing batten ends, thereby failing to waterproof. Right—Key inserted between copper and paper plastered on indicating opening through which water entered the building.



The two bottom photographs show what happened to the felt and compound under a hot sun. Note sagging of felt and flow-off of compound opening seams in felt. Cracks which opened here were caused by separation of gutter apron and roof slope copper. Felt and compound could not patch.



Regardless how expensive the paper is on which it is written, a guarantee is as valuable or valueless as the company which stands behind it.

Covering over a good copper gutter with felt and pitch is also of no avail as a leak stopper. True copper and composition roofs can be and are successfully bonded and flashed together. But let us remember that in these constructions the copper extends no more than four to six inches onto the roof.

But where an entire expansive underneath surface is copper the difference in movement between the two materials is great. The bond does not last. Small fissures enlarge. Facilely water slips underneath and finds its way to split seams. Frequently dammed up in this way, it leaks infinitely worse than before.

In some of the photographs we see a common error, i. e., placing a valley seam lower in the gutter than the level of the exterior wall. In some instances the batten seams are also too low. In freezing weather, when the outlets are stopped up, water backs up and penetrates the end butts.

The remedy here is to cut off the ends and extend the valley higher. If the water dams it will then flow over the walls, which is infinitely better than flooding inside the building.

A close examination of the photographs will

(Continued on page 123)



Pattern For a Bay Window Roof Having a Sweep

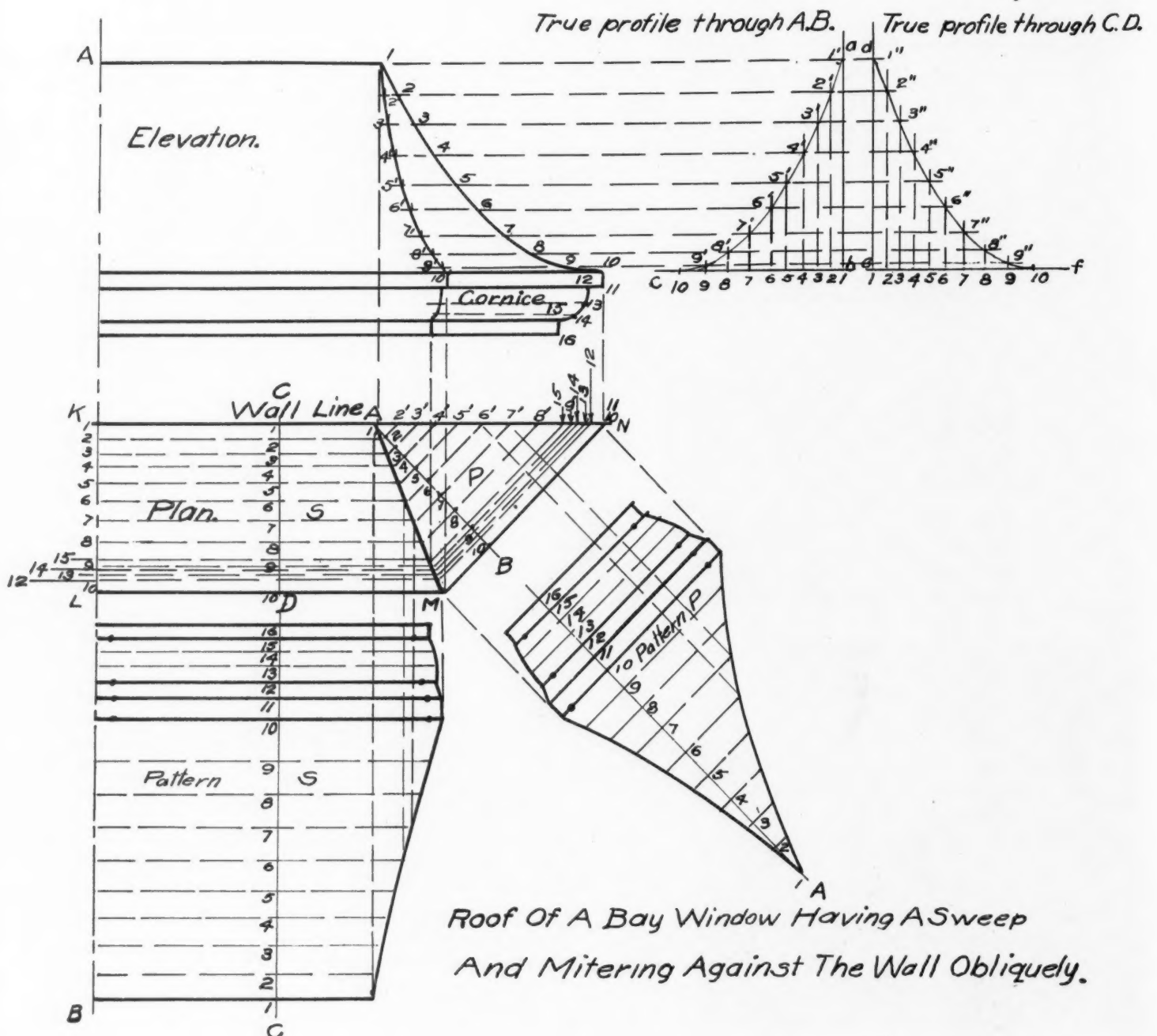
By L. F. Hyatt

A REQUEST for the development of a pattern for a sweeping roof for a bay window was submitted by a reader of the ARTISAN.

Begin the problem by first drawing the profile of the elevation of the roof as desired, here shown by the numbers 1-10-11-12-15-16. This represents the miter or joint line between the oblique

return M-N in the plan against the wall line. Now draw horizontal lines from points 1-10-11-15-16 intersecting the center line A-B. Divide the sweep of the roof into equal spaces and numbers as shown. The cornice is also drawn in this case.

Now draw the wall line of the plan view K-N, and the outline of the plan view N-M-L. From



points 1-2-3-4, etc., on the elevation view drop lines intersecting the wall line, locating points 1'-2'-3'-4', etc. Draw the miter line A-M in the plan view. From each of the points just located on the wall lines draw lines parallel with the line N-M allowing them to intersect the miter line A-M in the plan view. Now from each of the points on miter line A-M draw horizontal lines, allowing them to intersect the center line A-B.

From each point on the miter line A-B draw perpendicular lines allowing them to intersect like numbered horizontal lines in the elevation view thus locating the points 1', 2', 3', 4', etc., as shown. Through these points draw the miter line in the elevation view.

Finding Roof True Profile

It is now necessary to find true profiles through A-B and C-D on the roof. In this particular problem they are very nearly the same, but many times there is a decided difference. However, the procedure is the same. Draw the line A-B as shown on the plan view, at right angles to the line N-M, and at the same time the line C-D may be drawn, this being drawn of course at right angles to L-M.

Now draw the two angles at the right of the elevation view, a, b, c and d, e, f. From point b on the angle a, b, c step off the distance 1 to 2, 2 to 3, 3 to 4, etc. found on A-B, and from each of these points draw perpendicular lines of an indefinite length. Next draw horizontal lines from points 1, 2, 3, 4, etc., elevation view, to and including point 10. Through the points of intersection of these lines and the vertical lines of like number, draw the curved line which is the true profile through A-B and is shown by 1', 2', 3', etc.

Now from point e step off the distances 1, 2, 3,

etc. found on C-D and draw perpendicular lines as before allowing them to intersect the horizontal lines thus locating the points through which the curved line is drawn, 1'', 2'', 3'', giving the true profile of the roof through C-D. Having the true profile through each of the two sections we may now proceed with the development of the patterns.

Development of Patterns

Begin by extending indefinitely the line A-B and stepping off the distances 1', 2', 3', etc., found on the true profile through A-B. Upon this line also step off the distances 10-11-12-13-14-15-16 found on the cornice. Through each of these points draw lines parallel to the line M-N on the plan view. These lines may be of indefinite length. Now from each point on the wall line A-N and the miter line A-M and at right angles to M-N draw lines intersecting the line of like number previously drawn. Only the two lines one from point 6, and one from point 7 are shown drawn in, the others being omitted to avoid confusion. Now draw the straight and curved lines describing the outline of the pattern for part P. The dots shown on this pattern indicate bends.

Next extend the section line C-D indefinitely as D-C and upon this line step off the distances from 1 to 10 found on the true profile 1" to 10" as before. Through each of these points draw horizontal lines of an indefinite length. From each of the points on the miter line A-M on the plan view draw lines at right angles to L-M allowing them to intersect the horizontal lines of like number previously drawn. Through these points of intersection the straight and curved lines are drawn as shown in pattern S. No allowances have been made for soldering or riveting the patterns together.

Imagination Sells Commercial Ventilation

(Continued from page 50)

comfort cooling installations. Some of these are for residences; others are commercial installations. All came in as a result of seeing other installations and of talking to enthusiastic users of comfort cooling units.

A direct mail campaign using a special letter prepared by Sickie has been underway by this dealer in Hamilton, and Middletown, Ohio, and Richmond, Indiana. In the latter city, a list of owners of hot water heaters was obtained from the local light and power company. In Hamilton, O., homes which are known to have been insulated are being circularized. In Middletown, a list of homes in the better class neighborhoods are to receive the mailings.

Sickie also takes advantage of the wide variety of sales literature offered by the manufacturer

whose products he handles. Most manufacturers of air handling equipment supply catalogs, dealer sales manuals, mailing pieces, floor displays, newspaper mats, letters, etc. Several manufacturers even offer model houses with miniature attic fans for demonstration purposes.

Engineering Help

One thing that discourages some dealers considering the sale of fans to commercial users is the engineering problems which do arise in this field. Sickie finds the answer to this problem by securing help from the engineering department of his fan manufacturer and explains that practically all the better known manufacturers of comfort cooling units offer a similar service.



No "Tin Cup" Training In Dallas, Texas

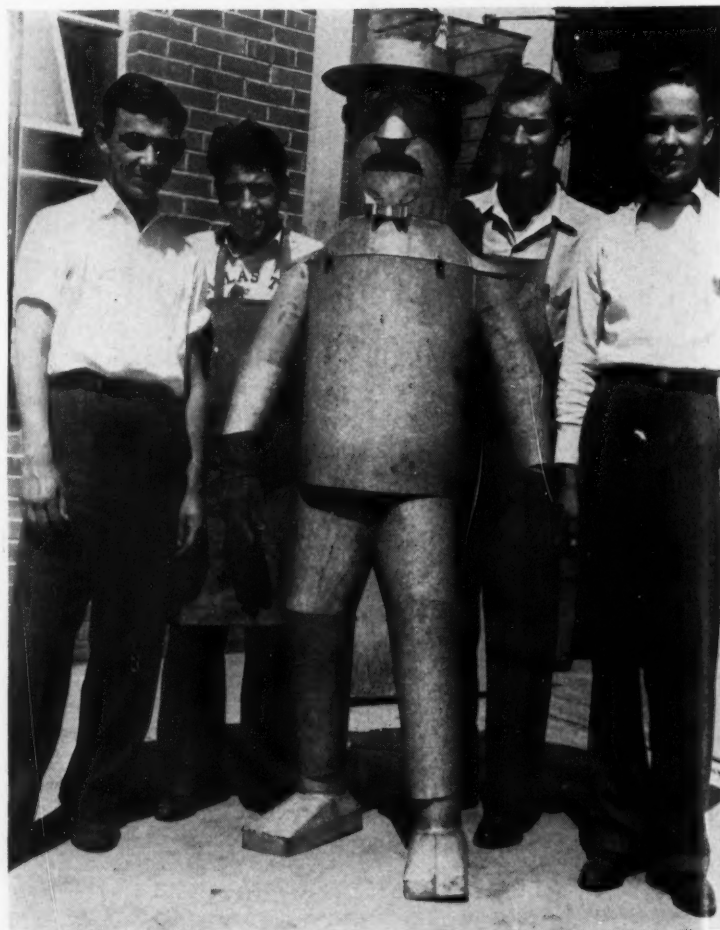
THE two photographs accompanying show work being done by boys in the Advanced Sheet Metal Class in Technical High School, Dallas, Texas.

Henry E. Sholty, Sheet Metal Instructor, in submitting the two pictures says: "These pictures of our boys and their work may be of interest to your readers.

"The 'Iron Man' was an outgrowth of pattern development. The class took measurements of one of the boys and fabricated a 'tailor made' suit to fit. This project stimulated interest in triangulation and different types of fastening.

"The other photograph shows two adjustable louvres used as awnings (in background); two forms of stationary louvres used for attic ventilation exhaust; and an all sheet metal locker.

"These items ought to show that our instruction and projects are very definitely out of the 'tin cup' stage and that our instruction is giving our boys some really practical training. Our school will welcome any comment or any questions."



*We're
on the job day
and night!*



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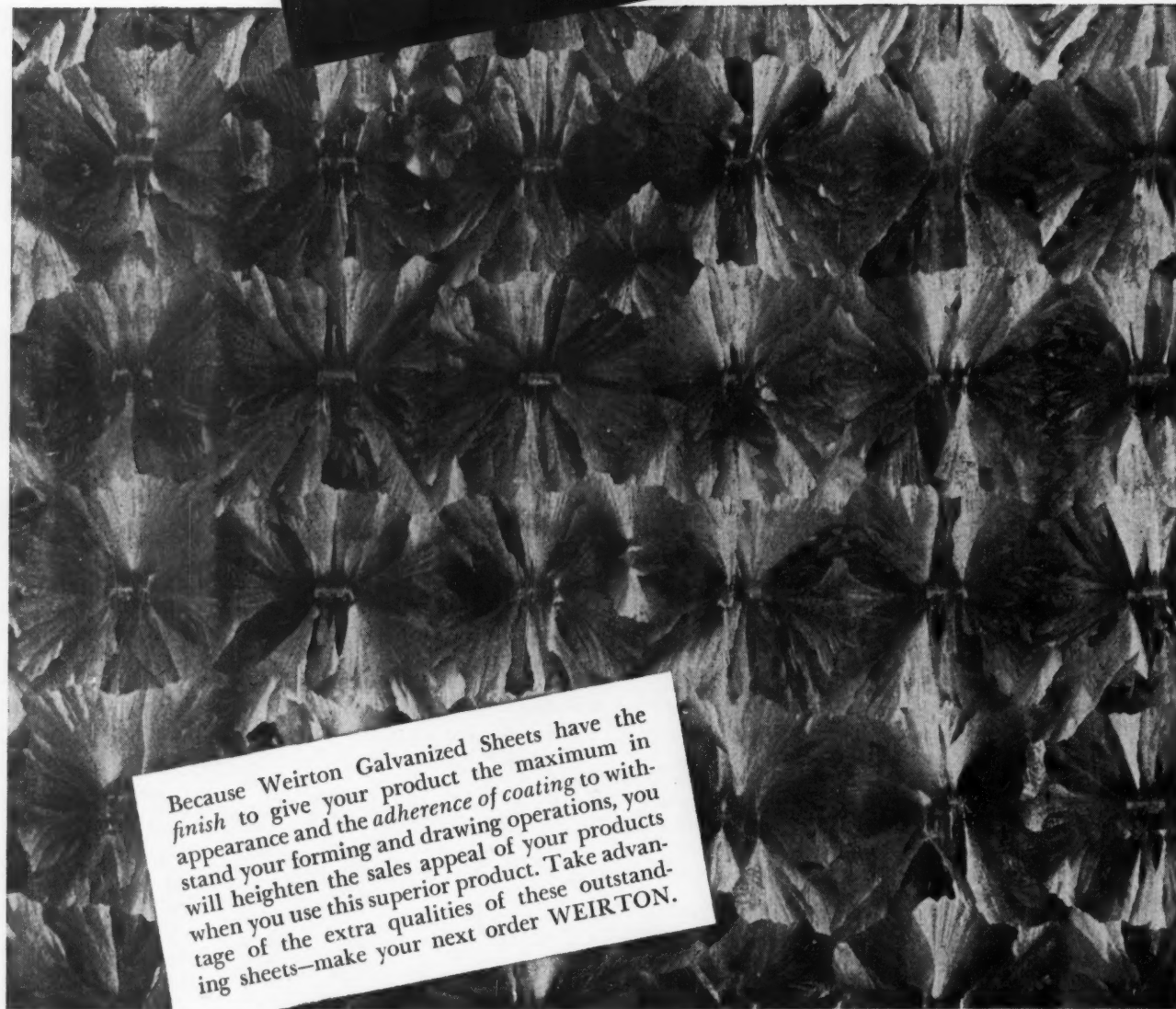


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Depreciation—

An Expense Often Overlooked

By Arthur Roberts

"I INVESTED \$2,500 in showroom modernization and a new truck, bought and paid for them in 1940, so why should I decrease my profits in 1941 and subsequent years with charges for depreciation? Such entries are only bookkeeping transfers, which will not affect my financial standing, neither will they make me any richer," said Frank Cummings, who had called us in to check over his books. This warm air dealer's reasoning anent depreciation is similar to that of many others in this field and signifies the need for better synchronization with the facts.

Probably no other accounting subject has been covered in so many different ways in books, articles, accounting tracts and speeches and this copious data on depreciation has done more to confuse the average warm-air dealer and sheet metal contractor than to clarify the muddy waters. We shall try to set the Cummings of this industry right on depreciation, presenting its fundamentals in a manner, simple and cogent. With these basic factors clear in mind, the warm air dealer and sheet metal contractor may have sufficient knowledge of depreciation to handle it properly for their purposes. Large manufacturers and utilities may need ponder deeper stuff, but not the retailers in this industry.

Depreciation Must Be Prorated

The subject of depreciation, for easy assimilation, may be divided into 3 main classifications: (1) Its purpose; (2) Its computation; (3) Its handling from an accounting standpoint. We will elaborate on these classifications in the order named.

The purpose of depreciation is twofold: (a) to include the depreciation charge in overhead or direct departmental cost so that the cost of an asset, pro-rated over its life, or an allowance for a contingency may be recovered in the selling price; (b) to record gradual decreases in asset value.

Cummings errs in assuming that he will not lose money by not charging profits with depreciation in 1941 and subsequent years. By the omission he will short-change himself because he will not add enough margin to his cost of sales, thus decreasing his profits on the year's business.

Eventually, it will amount to the same thing as giving away the cost of modernization and the new truck in short selling prices.

For example, if Cummings' sales are \$40,000 this year and his overhead expenses without depreciation total \$14,000, the overhead-to-sales ratio to be used in computing selling prices is 35 per cent. On the other hand, if his overhead expenses plus depreciation total \$16,000, his overhead-to-sales ratio is 40 per cent, hence, in figuring his margin of profit without the depreciation expense included, Cummings will not be getting enough for his services or merchandise. He will cut his net profit 5 per cent, which may be enough to put him in the red. To get profitable selling prices, the warm air dealer or sheet metal contractor must consider the percentage of overhead expense to sales and if this percentage is reduced through the omission of depreciation expense, his selling prices will be reduced accordingly.

Charge Off Everything Which Wears Out

Working assets, such as heating equipment, accessories, allied lines, delivery trucks, fixtures, tools and office equipment, also accounts receivable, depreciate from wear and tear and from other factors. By making annual charges for depreciation and allowances for bad debts and other contingencies, the dealer reflects this toll by reducing these asset values yearly.

The fact that Cummings had disbursed cash in a previous year for modernization and a new truck is no reason why each subsequent year in which these assets were used should not bear a proportionate part of this outlay. Whether a working asset is bought for cash or on time payments has nothing to do with the depreciation charge, neither is the charge limited to the year of purchase.

Insofar as his net worth is concerned, Cummings also errs in assuming that, because he paid for the equipment, his financial standing remains unchanged even if he does not depreciate yearly. If his books show that the modernization investment and new truck are listed at cost price indefinitely, his net worth will be inflated. Thus it is with many Cummings in this field who have fixtures, trucks, new store fronts, furnace clean-

ing, brazing outfits and other servicing tools recorded at cost price, whereas, some of these assets are worth little more than scrap value and the remainder should be depreciated from the time of purchase. The statements of such dealers show a bloated net worth because they do not follow wise business practise and write down their working assets with annual depreciation charges.

The computation of depreciation is always an estimate. There is no way to calculate it to the penny. Other costs can be reduced to dollars and cents, but not depreciation. We have never known a case where depreciation charges at termination of the write-downs have equaled original cost on the books, whether or not salvage or trade-in value was considered.

$$\text{Cost} \div \text{Life} = \text{Annual Depreciation}$$

The way to fix the depreciation rate is to take the cost-to-you of an asset, which is known. The unknown quantity, which puts the question mark on depreciation, is the profitable life of an asset. The most dependable way to estimate its span of usefulness is to check against your own experience with the same or similar assets. Lacking such experience, seek advice from equipment manufacturers or other dealers with the same or similar assets or enlist the counsel of accountants. When you have set the life span, divide the years into the cost. The result is the annual charge for depreciation.

For example, a store front costing \$1,000 with an estimated profitable life span of 10 years will carry a depreciation charge of \$100 yearly against profits. In making the estimate, remember that you should consider the profitable life, usefulness or capacity. Scrap or trade-in value cannot be considered when fixing the depreciation charge. When working assets are eventually scrapped or traded in, an adjustment accordingly may be made on the books, but in most cases, this value is nominal unless the asset is fairly new and traded in for a larger unit before it has lived its profitable life.

Depreciation varies with the use of an asset. This, however, pertains more to the use of mechanical equipment than fixtures. A machine may last 10 years operated 10 hours daily and 5 years operated 24 hours daily. If depreciation schedules are based upon the normal use of equipment and business demands necessitate working it many hours overtime, obviously, it will wear out faster and the depreciation charge should be proportionately increased.

Depreciation varies with the working asset. Certain assets have a longer span of usefulness than others. This must be considered. The depreciation charge differs with the type asset. A building depreciates less rapidly than a cash

register. The care given a working asset is another factor. Unless you keep your working assets in good condition, checking them periodically for defects, repairing and painting when necessary, they may depreciate more rapidly than estimated.

Obsolescence, in some cases, complicates annual write-downs. Machines grow obsolete before they wear out or style changes in store fronts or display fixtures put the bustle on the merchandising accoutrements before old age breaks them down. There are 2 kinds of obsolescence, that which is predictable with reasonable certainty and the accidental kind, unforewarned and therefore in the nature of a loss. The dealer need give little thought to obsolescence, but if he figures that an asset will grow obsolete before its profitable capacity has been reached, he may consider obsolescence when fixing the depreciation rate. Obsolescence may be combined with depreciation or figured separately.

Some Typical Depreciation Rates

Many warm air dealers and sheet metal contractors use the following rates with satisfactory results:

Wooden buildings.....	3% depreciation yearly
Brick buildings.....	2% depreciation yearly
Hand tools	25% depreciation yearly
Furniture, fixtures and office equipment, mechanical and non-mechanical	10% depreciation yearly
Showroom and stockroom equipment	10% depreciation yearly
Outside signs, floodlights, clocks, etc.	15% depreciation yearly
Delivery trucks	25% depreciation yearly
Motor-driven and heavy mechanical equipment.....	20% depreciation yearly
Accounts receivable.....	2% of Credit sales
Merchandise and supplies	1% of yearly purchases

Depreciation on hand tools and merchandise includes an allowance for theft, damage, shop-worn items and loss. These rates are guides. In the final analysis, your experience should influence the fixing of rate schedules to a much greater degree than other factors.

The handling of the depreciation charge on the books involves the opening of an account for depreciation the same as for other expenses and charging profits with the annual installment or preferably 1/12 of this sum each month. The offsetting credit goes to a reserve for depreciation. Compute this expense upon each asset separately, but all the entries may be made upon 1 ledger page for convenience. Likewise, with

the offsetting reserves. They may be placed on 1 page in the ledger. An expenditure for replacements or repairs increasing the life of an asset beyond the original estimate should be charged to the reserve account, which prolongs the schedule that much more because it reduces that year's write-downs.

Depreciation By Departments

If you departmentize as touched upon in the article, "Pro-rating Overhead Expenses," which appeared in the April issue of *AMERICAN ARTISAN*, then charge depreciation on working assets to the department using them. Pro-rate depreciation on buildings owned the same as rent, according to the departmental space occupied. Figure area in square footage. If not departmentizing, list depreciation under general overhead. Credit balances on reserve accounts resulting from annual depreciation charges to profits, should not bear interest. Never increase the original cost of a working asset. Its market price may increase, but this does not warrant the taking of appreciation. When assets are written down completely, depreciation ceases and obviously, profits in subsequent years tend to increase without this load.

In this field, we often come across a warm air dealer or sheet metal contractor who has written servicing equipment and other assets off the books so that they no longer are charged to profits via the depreciation account, consequently these dealers are reluctant to invest in modern units because they do not like to have profits reduced in subsequent years with depreciation charges. This is short-sighted merchandising. Old display equipment curtails sales and increases overhead expense, likewise, old or inadequate presses, shears, welding tools and other servicing units, hence, these deficiencies exceed the depreciation charges brought into being by the purchase of new equipment. It pays to replace old showroom equipment, trucks and servicing units whenever the need arises.

Three Ways to Compute Rate

"How shall I compute a fair rate?" is a question frequently asked by warm air dealers and sheet metal contractors. There are 10 methods of computing depreciation and they cause considerable confusion. All recognized methods may be used by the same dealer. Many who ask us to detail the various methods, assume that a method other than the one they are using may reduce depreciation expense. We have done extensive work on all 10 methods and find that there are only 3 that we can recommend:

1:—The straight-line method of depreciation.

The original cost of a working asset divided by its useful life, the result being the annual depreciation charge. If a working asset worth \$3,000 has a profitable life of 6 years, the depreciation charge is \$500 yearly.

2:—The reducing installment method. The heaviest charges falling during the early years of use on the assumption that a working asset is second-hand in 3 months and would sell for half its cost. This reasoning is unsound, it seems to us, although some authorities favor it, but depreciation measures the service of a working asset, not its market value. Moreover, the average business must be considered a going enterprise and its operating expense handled accordingly. Then, too, this method will swell costs and selling prices abnormally during the early years of equipment use. Nevertheless, this method may be worth consideration from the standpoint of expense equalization. During the early years of use, repairs and maintenance on a working asset are low. In latter years, this expense mounts. By loading the early years with heavier depreciation charges, this tends to equalize the expense over the years.

3:—The appraisal method. A physical check-over of all working assets to determine their worth, not in terms of remaining normal years of service as per depreciation schedules but with regard to actual physical condition. Even where another method is used, all depreciation accounts should be checked at least once yearly to determine how closely appraisal value lines up with book value.

Treasury Recommends Straight Line

All in all, we have found that straight-line depreciation is most satisfactory, simple and safe. Moreover, the Treasury Department recommends it and 90 per cent of the business organizations in this country, from the corner grocery to the Croesus utility, use straight-line depreciation. With business volume increasing, with purchasing power estimated at \$80,000,000,000 this year, be sure to make sure that depreciation expense is adequate so that you do not give away some of your working assets in short selling prices and also see that your old merchandising and servicing equipment is replaced with modern units so that you get your share of the boom business circulating around your territory.

Small Quantity Stampings

H P L Manufacturing Company has recently been established at 2015 E. 65th Street, Cleveland, to specialize in stampings in small quantities ranging from 25 to 5,000 pieces. Metal, fiber and other sheet materials will be fabricated.

The company was established by Ray Hedberg, Kermit Peterson, and Melvin Lorentz, who are experienced in the small lot stamping field, having been associated with that industry in Minneapolis for eleven years.



President Olsen, in president's address, complimented the association on excellent results obtained in rearmament promotion with Washington agencies.

N. W. A. H. & A. C. Ass'n Mid-Year Meeting

CURRENT business prosperity and business volume, the effects of the rearmament program on the warm air heating industry, and what the future holds so far as we can judge at present, dominated the Mid-Year meeting of the National Warm Air Heating and Air Conditioning Association.

These problems were succinctly summarized by President Olsen in his introductory address. He described how 1941, to date, has been the busiest year in the heating industry in many past years, despite the fact that there has been some apparent slackening in house construction in some areas during the past few weeks. The reduced cost of producing heating equipment, which should naturally follow the large increase in production volume has been offset, in the opinion of President Olsen, by increased material cost and inability of some manufacturers to obtain adequate stocks of material. Whether prices will be increased or decreased is yet impossible to determine.

"I do not believe, personally, that prices should be established on the basis of asking all the traffic will bear, because I have seen this attitude in past periods destroy our heating equipment market. The question as to what furnace manufacturers can do to assist the rearmament program is a problem which can not be answered at this time. All I can see is close contact with Washington. Our industry is encouraged by the fact that seemingly the army has concluded forced warm air heating is the most healthful type of heat for barracks, officers' houses and other structures connected with army training. We know that workers can not be expected to live in tents and trailers and believe the government will build thousands of small defense houses which will be heated with warm air.

"As a result of the contacts we have made with the different governmental agencies connected with rearmament, we are pleased to report that these agencies are now asking the counsel and advice of our association and our industry. Defense work is vital and every manufacturer should put defense work ahead of everything else on his production schedule. This war is a war of metals and so far as our association can judge our need for materials should be placed immediately behind the needs of the army, navy, railroads and perhaps agriculture. We are afraid that all galvanized iron will be required for defense work and if this proves to be the case, our industry will have to substitute other materials painted or finished. I strongly advocate that this association and its manufacturer members remember that the war will be over some day

and we will then need all possible markets. We should continue without letup our present research, publicity and other activities."

Some of the difficult aspects of priorities management were described by L. E. Scriven from the Office of Production Management. According to Mr. Scriven, the priority situation has not yet jelled, but it is hoped the situation will soon be clarified. Mr. Scriven pointed out that under the present emergency all our old guide posts have gone by the board and while we are trying to establish new ones, the road to establishment is difficult. Only if all industry pulls together can we obtain the objective set by our gigantic rearmament program.

The basic conception of priorities, according to Mr. Scriven, is comparatively simple and consists of—getting first things first. First things today are products pertaining directly to rearmament needs. In the production of these immediate needs some 26 materials have been placed on a priority list and control over production and distribution of these 26 materials will be centered in the Office of Production Management. Mr. Scriven warned that manufacturers should not become too encouraged by the reports of greatly increased production of certain materials, because the demands for these materials today have increased much faster than production. All industry, according to the speaker, should immediately investigate substitutes for materials now used.

Mr. Scriven said he believed the warm air furnace industry is in pretty good position to obtain materials because the heating of houses and buildings is necessary for defense and undoubtedly the necessary materials for these heating systems will be forthcoming.

Freedom—America's Watchword

Dr. C. Copeland Smith, representing the National Association of Manufacturers, delivered an inspiring talk, pointing out that this war, is a conflict of ideology and the one outstanding ideology which every man in America should endeavor to protect is our heritage of freedom. Some factors in the Washington picture are trying to convince us that we can combat dictatorship only by a bigger and better dictatorship—which is all wrong. America, said Dr. Smith, is unique among nations only in one fact and that is our liberty of thought, action and relationship. For 300 years we have attracted to our country those adventurous spirits who have found in our freedom the necessary environment to expand to the ultimate, the energy, initiative, and inherent inventive ability.

Dr. Smith pointed out that this liberty of thought and action is strikingly emphasized in figures which show that whenever 150 workmen start production, they become the nucleus for a community of 1,000 persons, 300 homes, 25 retail stores, 30 rooms for education, 24 professional men, railroads with a \$53,000 freight revenue, 6600 acres for production of products, and a tax basis of two and a half million dollars.

House Building Prospects

The building situation, as the building industry itself sees the picture, was described by B. L. Johnson, editor of American Builder magazine, Chicago, who said that as a result of contact with Washington he believes 300,000 houses in 1941 will likely be a "must" in Washington. New amendments to the National Housing Act make financing even easier than previously. Mr. Johnson said he personally believed the adoption of warm air heating by home owners has been one of the truly remarkable sales feats in the last two decades. Whereas furnaces, once upon a time, were apologized for by the builder, today the builder places warm air heating and winter air conditioning as of paramount importance in the homes he offers for sale.

Mr. Johnson pointed out that there are four economic currents stimulating private home construction. These are—

- 1—Abundant credit at low interest rates
- 2—A rapidly rising National income
- 3—The desire for home ownership as a means of security against unforeseeable future conditions
- 4—It is cheaper and safer today to buy or build than to rent

An American Builder magazine survey, among 1,000 home building contractors showed that in their own homes 40 percent of the heating systems were gravity warm air, and 22 percent forced warm air, leaving 38 percent for radiator heating. These 1,000 builders were asked what type of heat they would use if they were building their own home today. The answers showed 8 percent would choose gravity warm air heating; 56 percent would choose forced warm air heating; and 36 percent would select radiator heating. Building permits also show that some 200,000 houses, representing 44 percent of the building market will probably cost between \$3,500 and \$5,800; 139,000 houses will cost under \$3,500 and approximately 130,000 will cost more than \$5,800. This indicates, said Mr. Johnson, that the future house building field very definitely lies in the so-called low-cost house bracket.

A. G. A.-N. W. A. Cooperation

Among the reports of a more technical nature was the report of the co-operative program between the National Gas Association and the Warm Air Heating

and Air Conditioning Association, presented by Walter L. Seelbach of Cleveland. The mutual interest in house heating and the exchange of men between the two industries has brought about a very helpful situation, said Mr. Seelbach. Various government agencies have also furnished consumer representation on these established committees and co-operatively some 400,000 dollars has been spent on research. Construction of gas heating appliances and the installation of gas heating equipment has constantly been improved and extended, based primarily upon actual test data. About 2,000 gas burning appliances now have been approved.

Two important aids to gas heating are now under way—the elimination and reduction of noise and improved combustion. The gas heating industry hopes that "certified" heating in one form or another will be in existence nationally by 1942. The remarkable strides of gas as a heating fuel was emphasized by figures showing that 20 billion cu. ft. of gas were used for heating in 1930 as compared to 75 billion cu. ft. in 1940. Gas heating units have increased from 30,000 in 1929 to 125,000 in 1939. Also, striking is the fact that 65 percent of the new houses built in 1939 were gas heated, for the country as a whole.

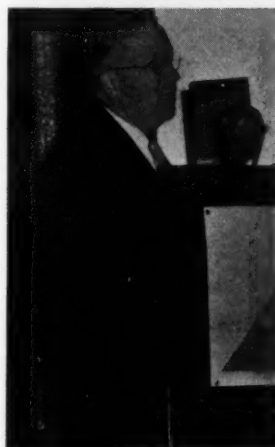
1942 Michigan State College Short Course

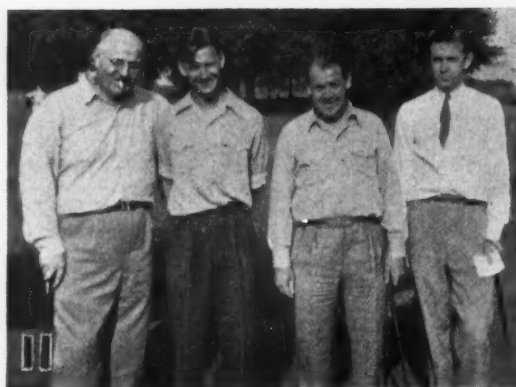
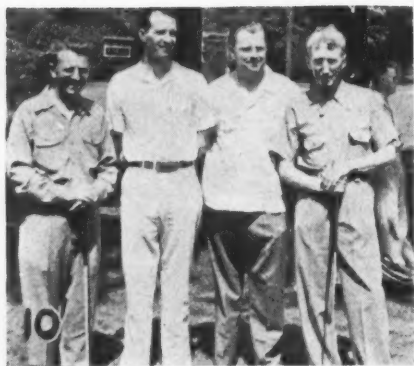
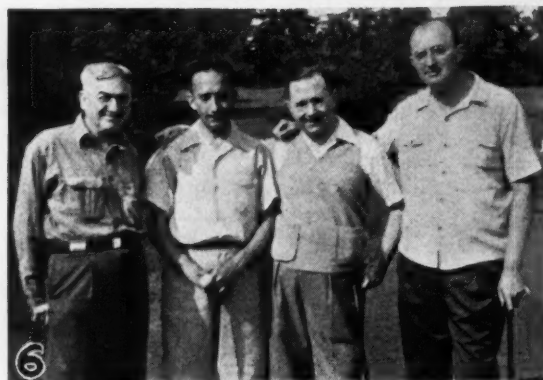
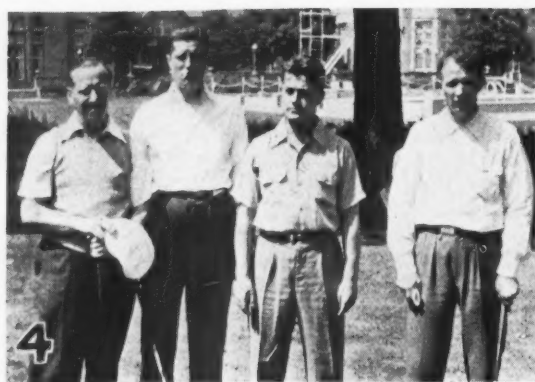
Prof. L. G. Miller of Michigan State College announced that the 1942 annual short course will be held March 23, 24, 25, 26 in East Lansing as usual. Three problems will be offered—the first an elementary system in a small house; the second the conversion of an existing gravity warm air heating plant to forced warm air; and the third the installation and design of a zone-heating system with some cooling in a large structure. Those in charge of the 1942 Short Course are also anxious to compare the amount of time required to design a system using the technical code completely as compared to design of the same system by the various short technical code methods advocated by many engineers and contractors. The School invites those having cut short methods to attend the session and compete in this contest.

Research Activities

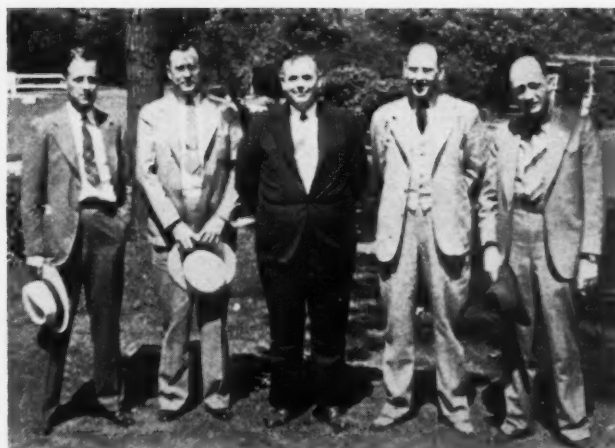
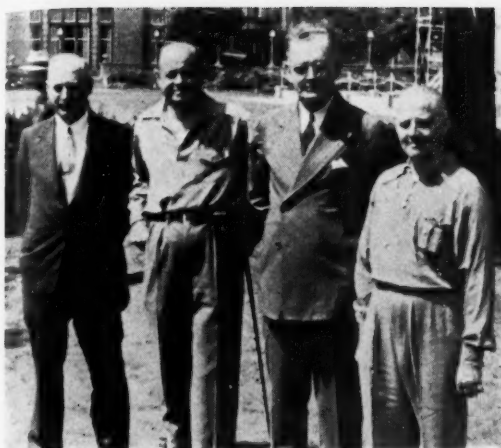
As usual, one session was devoted to reports of research activities. Research Advisory Committee Chairman, F. G. Sedgwick, pointed out that our research program is now being emulated by other competitive industries. We can only hope, he said, that the theory

Convention speakers—left to right—Research Advisory Committee Chairman F. G. Sedgwick urges purchase of the two association books. W. W. Rose reports scrap and cast iron situation. B. L. Johnson forecasts 300,000 new houses in 1941. Mr. Scriven (OPM) warned industry to find substitutes. Dr. C. Copeland Smith pleaded for continuance of America's heritage of freedom of thought and action. Walter L. Seelbach reported a tremendous advance of gas as a heating fuel.





In each picture left to right: 1—H. E. Curtis, Henry Furnace & Foundry Co.; Gil Denges, Williamson Heater Co.; E. B. Lau, Lau Blower Co.; George Auer, Auer Register Co. 2—Atlee Wise, Wise Furnace Co.; Irving Jones, International Heater Co.; A. L. Rybolt, Rybolt Heater Co.; H. N. Dix, U. S. Radiator Corp. 3—Ralph Blanchard, Hart & Cooley Mfg. Co.; E. T. Nesbit, Standard Furnace & Supply Co.; L. R. Taylor, International Heater Co.; H. H. Johnson, H. H. Johnson Co. 4—Harry Himmelblau, Himmelblau-Byfield Co.; J. E. Higgins, L. E. Fisher, C. L. Rowley, Owens-Corning Fiberglas Corp. 5—Golf Committee Chairman J. Harry Ebbert, The Armstrong Co. 6—F. E. Kise, Williamson Heater Co.; H. A. Maccubbin, Montgomery Ward; W. J. McGrath, Williamson Heater Co.; Ray Lorenz, Chicago Furnace Supply. 7—Ed Maire, Penn Electric Switch Co.; Carl Staley, Aldrich Co.; Bud Clusserath, dealer, Hammond, Ind.; Ray Schmitz, White-Rodgers Electric Co. 8—J. E. Maynard, American Radiator & Standard Sanitary Corp.; Ross Mahoney, Sheet Metal Worker; Sam Burgess, Rock Island Register Co.; Bruce Richardson, Independent Register Co. 9—F. N. Parker, Round Oak Co.; Paul Penn, Penn Electric Switch Co.; S. A. Scully, Round Oak Co.; N. W. Ross, Research Products Corp. 10—A. Galava, Morrison Products, Inc.; J. H. Van Alsborg, Hart & Cooley Mfg. Co.; Bruce McLouth, McLouth Air Conditioning Corp.; Fred Bishop, Brundage Co. 11—Ralph King, Mel Jackson, Grant Wilson, Inc.; Laurie Walquist, Chicago Furnace Supply Co.; Bill Taylor, Grant Wilson, Inc. 12—Paul Barth, O. M. Barth & Son; F. C. Nolting, West Side Hardware Co.; E. J. Nemec, Northwestern Stove Repair Co.; Harvey Hiller, Laclede-Christy Clay Products Co.



Left—Some of Chicago Convention Committee: J. Harvey Manny, Robinson Furnace Co.; Hugh Courteol, Mercoid Corp.; T. Reid Mackin, International Heater Co.; Grant Wilson, Grant Wilson, Inc. Center—Managing Director George Boeddener. Right, some non-golfers and potential horse shoe pitchers—W. R. Bussom, LaClede-Christy; Bud Ruh, Sall Mountain; Professor L. G. Miller, Michigan State University; Bob Champlin, Timken Silent Automatic; Gene Ziebold, Cook Electric Co.

on which our research was founded—"Find Out the Truth and tell it and let the chips fall where they may" will also be the prime theory of other research programs. Modulated heat supply with gas as a fuel will be the chief test during the coming winter. Chairman Sedgwick pointed out that the code for rating oil-burning furnaces which has been established by research involves seven important functions:

- 1, a method of test procedure for all oil-burning furnaces applicable to all manufacturers.

- 2, engineers from manufacturing plants will be given a 2-day short course clinic to teach them how to test oil-burning furnaces.

- 3, each manufacturer who has thus co-operated by sending a representative to the clinic will be entitled to test his future equipment through the services of this representative.

- 4, an independent engineer will be appointed head of the testing committee.

- 5, in case of controversy, this committee consisting of the independent engineer and three engineers appointed by the manufacturers will be asked to decide questions.

- 6, a seal of approval will be placed upon all products tested under this new code.

- 7, manufacturers not having a trained engineer for testing can get test data through the officers of the appointed independent engineer.

Chairman Sedgwick said he felt confident government agencies will accept test data established by this method of rating. It is hoped that additional testing procedure for stoker and gas-fired furnaces may be established in the future.

Rating Code for Oil Burning Furnaces

Prof. A. P. Kratz then described this method of rating oil-burning furnaces. We are not able to publish the test procedure until final corrections have been made, but the procedure will be available for publication shortly. Prof. Kratz pointed out that work on an oil-burning furnace test code was begun in 1936 and a theoretical code was established but only during the winter of 1940-1941 has the theoretical code been checked by actual test.

The most important change described by Prof. Kratz has been the fact that actual test indicates that a centrifugal blower rated according to the blower manufacturers' code for air delivery against an established resistance is not a completely reliable index to that same fan capacity when installed in a furnace

casing and the furnace-fan unit installed in a residential duct system. Prof. Kratz had slides showing tremendous decreases in fan air delivery when the furnace-fan system was operated under actual conditions. Prof. Kratz also pointed out that a furnace can not be satisfactorily rated by arbitrarily compiling figures of oil input, cfm delivery, static pressure, but a given oil-burning furnace must be rated according to one set of test conditions which the manufacturer must publicize in order that the dealer can know exactly what the characteristics are of the furnace unit he is installing. This single line characteristic data will be explained in detail in the paper.

Effect of Air Changes on Comfort

Prof. S. Konzo presented two important research activities. First he presented the suggested method for selecting and rating ducts, fittings, registers and grilles for gravity warm air systems as published in the residential air conditioning section of this issue.

Secondly, he discussed in detail the very important problem of air change, how many are necessary, what the effect of a given number of air changes is on room comfort conditions, the effect of air change on register location and register size, and the effect of air change on bonnet temperature.

This data, also, will be published in complete detail later. In brief, however, this report by Prof. Konzo showed that a plant designed on the basis of three air changes per hour operated 15 hours out of 24, whereas a system designed on six air changes per hour operated only seven hours out of the 24. The power consumption required by the fan was practically the same in both cases.

At three air changes per hour, the average length of off-period of the fan was eight minutes. At six air changes per hour, the average off-period of the fan was twelve minutes. As to temperature gradients in a given room with high wall registers, the three air changes per hour and six air changes per hour system both showed a differential of approximately two and one-half to three degrees, from breathing level to ceiling, and an average temperature differential of two to three and one-half degrees from breathing level to floor. If we are convinced that longer operations of the fan are desirable for comfort conditions, then either a two-speed blower or a system designed on a smaller number of air changes will provide these desirable characteristics.

Tests on the effect of lower or higher bonnet tem-

(Continued on page 132)

Association ACTIVITIES

Kansas City

The 1941 officers of the Sheet Metal and Heating Contractors Association of Kansas City, Missouri, are:

L. B. Higgins President
A. F. Gus Werner Vice-President
G. W. Blaich Secretary-Treasurer
Everett L. Gilbert Business Manager

Indiana

A district meeting of the Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc., and the Indiana Fur-Mets was held in New Castle, Indiana, on April 25th. Members were present from the towns of Fort Wayne, Kokomo, Richmond, Muncie, Anderson and Indianapolis. We appreciate the attendance of the Indiana Fur-Mets at this meeting. Homer Selch, Secretary.

Fox Valley, Illinois

Regular meeting of the Fox Valley Furnace and Sheet Metal Contractors' Association was held Monday evening, May 19, 1941, at the Blackhawk Restaurant, Elgin, Illinois.

George Tansil of The Minneapolis-Honeywell Regulator Company gave a talk on advertising. It was decided to start a school in Aurora and Elgin to learn about servicing, etc. These meetings will be held the second and fourth Wednesday of each month.

Mr. Hoy of Snips Magazine read an article (from the March issue of Snips, Page 46) on the proposed Illinois Sheet Metal and Furnace law.

The next meeting will be held June 16, at Bobbit's Cafeteria, Aurora, Illinois.

Fred R. Lamp, Secretary.

Florida

New officers elected at the 1941 annual convention of the Roofing and Sheet Metal Contractors' Association of Florida held in Jacksonville on April 18 and 19, are

President Wm. M. Palmer, Miami
1st Vice President E. H. Blank, Daytona Beach
2nd Vice President R. E. Moorehead, Lake Wales
Secy.-Treas. L. A. Burgess, West Palm Beach

The Legislative committee consists of Frank Tack, S. F. Bridwell, and Fred A. Falkner.

The association is active in protecting the industry against unfavorable legislation. The committee notified the secretary regarding House Bill No. 116 and the secretary sent telegrams to eleven roofing and sheet metal contractors in cities where the most shops are located, asking that they inform all in their city. In West Palm Beach the local general contractors and the merchants association also sent telegrams opposing Bill 116. House Bill No. 116—amending workman's compensation benefits, increasing compensation from 55 to 70 percent, with unlimited healing period, increasing medical and attorneys' fees for employees, all to be paid by the employer or insurance company through increased premiums by 17 to 20 percent—was attacked and a more favorable bill, House No. 569, was passed by the House on May 1.

These activities make the association valuable to members.

L. A. Burgess, Secretary-Treasurer.

Illinois

The Illinois licensing bill, sponsored by the Sheet Metal Contractors Association of Illinois, has been proceeding slowly. House bill No. 152 was referred to the House sub-committee and then reported out of sub-committee and the full Judiciary Committee with recommendation to pass. The Bill has passed first reading and now stands on second reading. Second reading is the amendment stage. The secretary of the association, Wm. W. Johns, 212 West Main Street, Urbana, is asking contractors to write or wire their representative asking favorable action.

The bill was referred to a sub-committee to broaden its scope. It was the consensus that fuel burning devices, thermostatic controls—in short everything used with a warm air heating system—should be included.

Municipalities over 500,000 population have been excluded.

The sub-committee also asked that it be designated that members of a person's own family or a regularly employed janitor could effect repairs and maintenance.

Persons now in the business will be required to pass a written elementary examination on forms under oath, to prove he is qualified. This requirement is simple and yet not so simple that the gates are wide open.

The bill is now on the House Calendar. Third reading is voting time. Hon. Warren L. Wood at Springfield has been asked for a schedule of readings and members will be acquainted with the needs for further support.

J. E. Peterson, president.

Milwaukee

The Milwaukee Sheet Metal Contractors' Association held their monthly meeting at the club rooms of the Hotel Medford on June 2. The meeting was called to order by Vice President Joseph Geier in the absence of the president, with an attendance of 22. The minutes of the two previous meetings were read, and approved.

All Committee reports were dispensed with except the Entertainment Committee reporting on the annual picnic. After four plans were submitted by Chairman Walters and his co-worker Harry Eschenburg—Hilgren Spring Picnic Grounds, Wolf's Island Park, boat trip on the new "Clipper" and Mequon Tavern Park—Mequon Tavern Park was selected and the date set for Wednesday, July 23, 1941. The meal created quite a discussion—chicken or Sauerbraten with Bayerische Knoetel. The vote was ten to seven in favor of the Sauerbraten-Bayerische Knoetel meal.

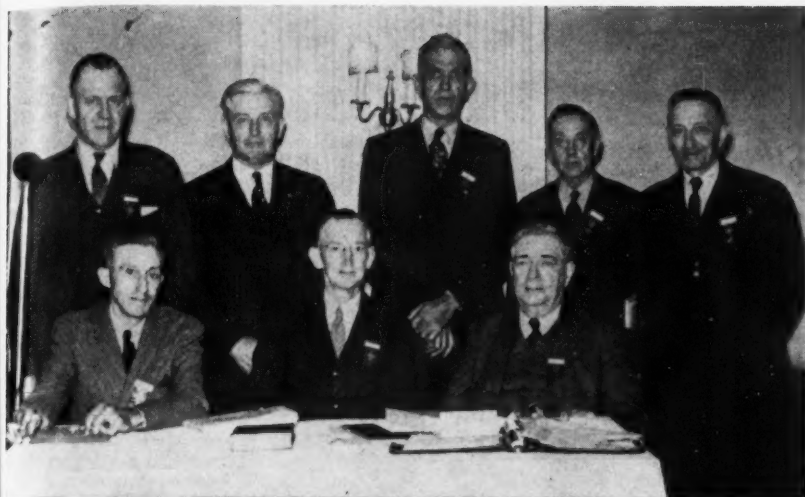
One hundred dollars was appropriated for advance expenses and the boat picnic project was tabled until the July meeting.

After adjournment, the usual get together meeting with refreshments was appreciated.

Paul L. Biersach, Secretary.

Charles Salinger

Charles Salinger, a member and former president of the Roofing Metal & Heating Engineers, Inc., Philadelphia, passed away on April 28 at his home. Mr. Salinger, nearly 70 years of age, was a successful and practical roofer. For 50 years he was a member of the Philadelphia Schuylkill Navy and on January of this year was elected as Commodore after serving as Vice Commodore for sixteen years.



Officers for 1941. Seated, left to right—Second V. P. Frank Schimpf; President J. D. Sprucebank; Secretary M. F. Liebermann. Standing, left to right—Director John Garey; Treasurer, H. G. Hartline; Directors Edward Harper, R. S. Hahn, Louis Luckhardt.



Auxiliary officers, left to right—President E. D. Workman; Vice-President J. W. Proie; Secretary-Treasurer H. S. Criswell.

Pennsylvania's 1941 Convention

CONTRACTORS representing most of the important cities in Pennsylvania, excluding Philadelphia, met in Greensburg, May 15 and 16, for the annual convention of the Sheet Metal and Roofing Contractors' Association of Pennsylvania. Encouraging to the members assembled was secretary Liebermann's report that during 1940 membership in the association grew steadily. During the year committees and officers of the association engaged in several important activities so that the convention assembled with a successful yearly record behind it. Secretary Liebermann reported that the bill passed by the Pennsylvania house to lower compensation rates of employers who furnished steady employment throughout the year had been tabled by the senate committee and, at the time of the meeting, was not making any progress. The financial condition of the association was satisfactory, the most important change being the sale of advertising space in the annual convention program, thereby eliminating convention dues and increasing funds in the treasury.

Suggestions for Increasing Membership

The success achieved in obtaining additional membership in the association was due, in part, to the activities of the salesmen's auxiliary, which was fairly active throughout the year. Auxiliary President Edward Workman (who was also elected to serve for 1941) said both association and auxiliary should not be content with the membership success obtained in 1940, but should both increase efforts to obtain additional membership in 1941 so that the association can function and accomplish the many things which must be considered. Auxiliary President Workman suggested that in each locality where a number of contractors and auxiliary members live, local luncheon meetings might be held several times throughout the year to stimulate both local and state business. It should be the purpose of such luncheon meetings to ask contractors not members of the state association to attend the luncheon and acquaint them with the

accomplishments of the association.

State Association President A. J. Sabthné was not able to attend the convention, so the meetings were presided over by Vice President J. D. Sprucebank, who was elected President for 1941.

Vocational Training in a Tailspin

A number of important general problems were presented for discussion by committees having these problems under consideration during the year. E. H. Reismeyer, chairman of the vocational training committee, reported that the need for good mechanics is widespread throughout Pennsylvania and the scarcity is increasing. "It is true," said Mr. Reismeyer, "we are operating in a machine age in which the machine operator is slowly replacing the all-around sheet metal mechanic in many of the larger shops, however, the need for trained mechanics able to layout, cut, form and assemble sheet metal products still remains a very pressing need for the small and average shop without sufficient mechanics to specialize in certain operations." Mr. Reismeyer reported that his committee believes the average employer is not taking enough interest to send boys to trade schools or to apprentice schools, nor are the employers giving sufficient supervision to the apprentice working in the shop.

One present difficulty is the fact that the government is seeking instructors to train boys for rearmament sheet metal work, these instructors to have complete experience, but the government being unwilling to pay more than \$140 a month for an instructor. Mr. Reismeyer declared he did not believe a capable instructor of this calibre could be obtained for \$140 a month excepting for part time instruction. Employers reported to the committee that boys lately are not too willing to learn the sheet metal trade and if this situation continues a very serious shortage of all around mechanics will be felt very shortly. Chairman Reismeyer reported that the long and well-known sheet metal training school at Carnegie Institute of Tech-



Above — Auxiliary President Workman suggests local luncheon meetings to stimulate interest in association affairs.



Left—J. H. Van Alsbury described the sales "musts" of the contractor who wishes to be successful under today's competition.



Overhead Committee Chairman J. E. Davis presented and discussed the overhead reports shown in the table facing. The table explains why Pennsylvania believes overhead on productive labor is the easiest method of applying an overhead percentage.

nology has lately discontinued the day school because of a lack of students and is now only conducting government supervised night courses.

Overhead Committee Report

J. E. Davis, chairman of the Overhead Expense Committee, presented a very interesting report on overhead. During the year, the committee solicited reports from contractors and obtained 20 complete reports in which the firm showed the total gross dollar volume, the productive payroll, the overhead expense for the year. From these 20 reports, the overhead expense committee calculated the percentage of overhead on productive payroll for each of the 20 shops and also the percentage of overhead on total sales. Overhead on productive labor for the 20 shops varied from a minimum of 64 per cent to a maximum of 209 per cent. Overhead on total sales varied from a minimum of 14 per cent to a maximum of 60 per cent. The average percentage of overhead on productive payroll for the 20 shops was 90 per cent; the average of overhead on

gross sales for the 20 shops was 26 per cent.

These overhead figures for the 20 reporting Pennsylvania shops are shown in an accompanying table with the necessary footnotes of explanation. In addition, in the annual program booklet, the overhead expense committee presented six typical problems to show why the Pennsylvania association believes that for the average shop overhead calculated on productive payroll is the simplest and best method to follow. In the problems presented, the overhead committee showed how the shop which does a considerable volume with expensive material (such as stainless steel) can penalize the customer if the overhead is calculated on total sales volume when, in reality, the amount of labor required is no more for expensive material than for less expensive materials.

(Editor's Note:—This finding of the Pennsylvania Association Committee on Overhead, does not correspond with the experiences reported by many shops who do considerable expensive material work. Many reports indicate that it is more expensive to handle costly materials because of the chance of spoilage or

Left, top—Mr. Neiber reported the latest compensation insurance rates for the industry and asked contractors to stimulate youthful interest in safety.



Center—Professor R. E. Slesinger, Univ. of Pittsburgh, invited discussion of world economics and did an excellent job of answering world shaking problems. Right—R. W. Lipstreu said filling in an FHA financial report need not be a difficult task if "approximate" answers are used.



REPORT OF OVERHEAD EXPENSE COMMITTEE
SHEET METAL & ROOFING CONTRACTORS' ASSN. OF PENNA.
Analysis of Statements Received from 24 Firms Covering Their Operations for 1940

No.	Gross Business	Productive Payroll	Overhead	% of Overhead on Productive Payroll	% of Overhead On Sales	Salaries & etc.	% of Salaries, etc., on Productive Payroll
Group No. 1							
1	\$ 7,361.00	\$ 2,644.00	\$ 1,822.00	69%	25%		
2	9,930.00	2,814.00	2,672.00	95%	26%	\$ 310.00	11%
3	10,507.00	1,584.00	1,884.00	119%	18%	780.00	49%
4	11,412.00	2,204.00	1,643.00	75%	14%		
5	20,294.00	7,211.00	10,068.00	140%	50%	3,220.00	45%
6	20,582.00	5,978.00	5,985.00	100%	29%	3,247.00	54%
7	20,670.00	4,612.00	9,643.00	209%	47%	2,906.00	63%
8	22,371.00	8,138.00	6,434.00	79%	29%		
9	22,928.00	7,534.00	4,810.00	64%	21%	1,508.00	20%
10	26,998.00	8,506.00	10,083.00	119%	37%	5,013.00	59%
11	29,011.00	6,267.00	5,943.00	95%	20%	2,920.00	47%
12	31,468.00	9,912.00	7,845.00	79%	25%		
13	32,139.00	10,189.00	7,962.00	78%	25%	3,634.00	36%
14	39,303.00	10,568.00	8,675.77	82%	22%	3,443.00	33%
15	62,186.00	13,282.00	11,687.00	88%	19%	2,412.00	18%
16	63,058.00	15,089.00	17,366.00	115%	28%	9,319.00	62%
17	64,209.00	19,139.00	20,025.00	105%	31%	7,110.00	37%
18	73,918.00	20,002.00	21,884.00	109%	30%	8,060.00	40%
19	103,686.00	37,261.00	24,297.00	65%	24%	7,748.00	28%
20	155,975.00	43,170.00	29,731.00	69%	19%	10,195.00	24%
Total	\$828,016.00	\$236,104.00	\$210,459.77	1954% Av. 90%	Av. 26%	\$71,825.00	Av. 34%

If the average Overhead of the above 20 firms is based upon the number of firms—divide total average 1954 by 20 = 98% which might be considered a fairer way to compute the average since the last 2 firms have exceptionally low overheads while their combined gross volumes are high.

Group No. 2							
21 A	\$ 6,603.00	\$ 563.00	\$ 3,029.00	538%	46%		
22 B	9,872.00	3,275.00	1,444.00	44%	14%		
23 C	29,231.00	9,687.00	2,328.00	24%	08%		
24 D	83,348.00	9,187.00	27,491.00	299%	33%	\$ 9,412.00	102%
Total	\$957,070.00	\$358,816.00	\$244,751.77				

Group No. 1. Consists of firms engaged in the usual roofing and sheet metal business and have furnished enough items to arrive at a fair analysis.

Group No. 2. Consists of firms who either have apparently not furnished enough individual items to arrive at a fair analysis or are engaged in some activities not customary to the usual roofing and sheet metal business.

Note: A—Possibly owner does most of work himself and may have his wages in the Overhead figures.

B—Almost half of the individual items of Overhead not listed—particularly "Salaries."

C—None of the individual items given for Overhead.

D—Most individual overhead items were listed. But from the payroll figures as well as individual items of Overhead submitted, apparently sells a commodity that is essentially complete when they buy it from the manufacturer and therefore the installation labor may be minor compared with the sales price. Therefore, believe it best to keep these figures separated from Group No. 1 figures.

waste; also the customer who insists upon expensive material should expect to pay more for the fabrication of expensive materials than for the fabrication of low-cost material. In addition, many shops report that production is not as fast with expensive materials because the shop force proceeds cautiously with the fabrication in order to minimize waste, spoilage, and errors in fabrication.)

The convention was benefitted by three important addresses. J. H. Van Alsbury, speaking on "Salesmanship" described how the old-time salesman was re-

placed in the twenties by the engineer who now has been replaced, in turn, by the sales engineer who is, in the final analysis, only the engineer of the twenties and the salesman of the early 1900's. All industry, said Mr. Van Alsbury, including the warm air heating industry, is attempting to combine salesmanship with engineering in order to obtain completely satisfactory selling from the customer's standpoint. There are, declared Mr. Van Alsbury, some things about salesmanship which the warm air heating dealer should keep

(Continued on page 128)

New PRODUCTS

For your convenience a number has been assigned each item. Circle the items in which you are interested on the coupon on page 102 and mail to us.

● Indicates product not listed in 1941 Directory.

△ Indicates manufacturer not listed in 1941 Directory.

94—Console Conditioner

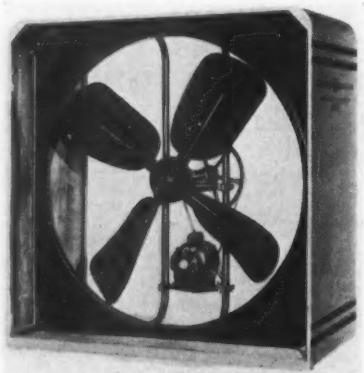
Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., announces two new compact air conditioning units for cooling, filtering and circulating air.



The $\frac{1}{2}$ horsepower condensing units cool 200 cu. ft. of air per minute and requires a minimum window opening of 15 $\frac{1}{2}$ in. high and 27 in. wide. The console model, $\frac{3}{4}$ horsepower condensing unit, cools 330 cfm of air and requires a minimum window opening of 7 $\frac{1}{4}$ in. high and 26 $\frac{1}{2}$ in. wide.

95—G-E Attic Fan

General Electric Company, Bridgeport, Connecticut, announces a home cooling unit styled by Ray Patten and enclosed in an attractive square



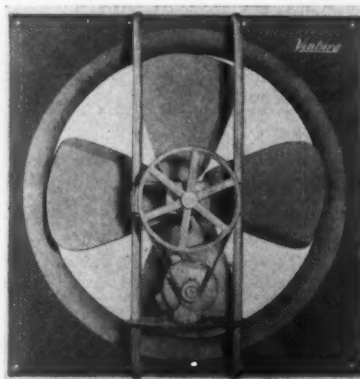
wooden housing. The housing is mounted on rubber blocks, the wood casing is designed to prevent transmission of noise, and every moving part of the fan unit is isolated from other parts by resilient rubber.

The suction chamber, ceiling grille and air outlet openings are easily constructed and may be adapted to the varying conditions of different homes. Three sizes of home cooling units with fan sizes of 36, 42 and 48 inches are available.

96—Ventura Commercial Fan

American Blower Corporation, 6000 Russell Street, Detroit, announces a new Ventura commercial fan, a 4-bladed wheel (steel blades), steel wall plate with die formed inlet, shaft, rubber mounted fan bearings and V-Belt drive, completely assembled with motor mounted on air intake side.

60-cycle, single phase motors on sizes 24, 30 and 36 are long duty split phase, totally enclosed. Single phase



motors on size 42 and 48 are capacitor type. All motors are resilient mounted except DC, 3-phase, 50-cycle and 25-cycle.

Propellor fans are made with direct connected motors or with V-Belt drive. Tables I and II in Bulletin No. B2529 list applications for which V-Belt drive or direct connected Venturas are best suited.

97—Vitroliner

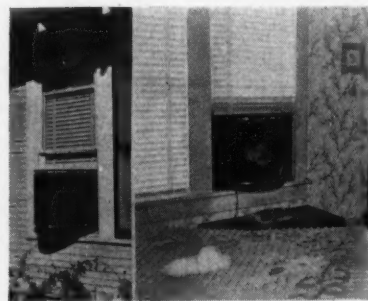
Condensation Engineering Corporation, 2515 Archer Avenue, Chicago, offers Vitroliner—a system of vent piping for gas appliances—to be installed in exposed or concealed locations of new or old buildings. Vitroliner serves the same purpose as any standard chimney.

Vitroliner pipe is a heavy gauge, welded seam Armco metal coated inside and out with a high temperature acid resisting vitreous enamel. The pipe is made in stock sizes from 3 to 10 inches in diameter (round or oval in most sizes) of 6, 12 and 24 inch lengths; 22 $\frac{1}{2}$, 45 and 90 deg. elbows and open or closed tees with drain provision. Also oval to round union joints.

Insulation is high temperature asbestos of one inch thickness.

98—Zeph-aire

American Metal Products Co., Sylva Station, P. O. Box 66, Fort Worth, Texas, announces Zeph-aire coolers—"East Wind," a portable model; and "West Wind" and "North

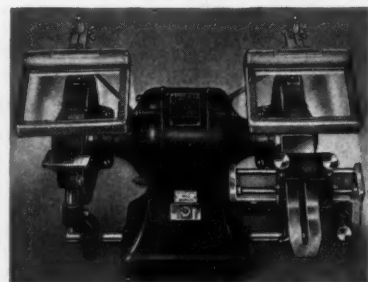


Wind," both window-type models, to fit windows from 28 to 42 inches wide.

These units have multi-speed control on fan motor, with separate switch for pump control. Cooling pads are invisible from outside of unit and are easily replaced. The unit may be filled from front or may be connected to a water supply.

99—Edge Tool Grinder

Stanley Electric Tool Division, The Stanley Works, New Britain, Conn., offers a $\frac{1}{2}$ hp grinder, ball-bearing equipped with 7 x 1 inch wheels, with the new Stanley "Flud-Lite" eye shields. The eye shields are connected to the grinder circuit so that lights go on or off as grinder switch is operated. Grinder is available in A. C.



or D. C. with top speed of 1800 rpm.

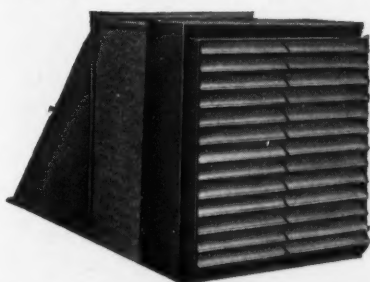
The special motor in Grinder No. 677 operates at the correct slow speed so that edge tools will not have temper burned out. Two wheels are furnished with the grinder. A patented plane iron and chisel grinding attachment with a micrometer screw adjustment is supplied.

New Products

For your convenience in obtaining information regarding these items, use coupon on page 102.

100—Roof Ventilator

Viking Air Conditioning Corporation, 9500 Richmond Ave., S. E., Cleveland, announces Model "R" Viking roof ventilator, designed primarily for flat roof installation.



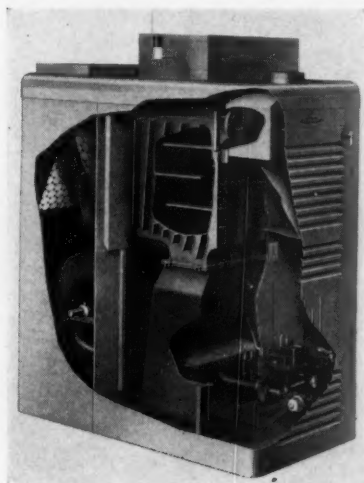
The Model R is a complete unit consisting of a high capacity fan assembly enclosed in a weather-proof pent-house of heavy galvanized iron and automatic vertical shutters. It can be flashed directly to the roof slab. Flanges are provided.

The Viking roof ventilator is available in three sizes—7,500, 11,500 and 16,500 cfm.

The outstanding feature is the automatic vertical shutter—balanced, light weight, hardened aluminum vanes supported by steel shafts pivoted in bronze bearings. The shutter vanes are held open by a spring and lever arrangement as long as the fan is in operation.

101—Gas Conditioner

The Henry Furnace and Foundry Company, 3473 East 49th Street, Cleveland, Ohio, has just introduced a new Moncrief gas-fired winter air conditioner. The unit is compact. The



radiating surface is large in proportion to gas output. Special design has produced long gas travel and a new system of baffles compels the hot gases to travel always horizontally and upward and to contact all the in-

terior of the heating chamber so that every part of the unit is an effective radiating surface. Fins projecting vertically from the exterior of the heating units add further to heat transfer surface.

Cabinet is beautifully styled and finished in smooth gray enamel.

Controls are easily accessible.

This Moncrief gas fired winter air conditioner is made in a number of sizes for varying requirements.

102—Thermo-Draulic Damper

Perfex Corporation, 500 W. Oklahoma Ave., Milwaukee, is manufacturing the Thermo-Draulic Damper Operator—a new, simplified control for domestic hand-fired coal or coke heating systems. The operating arm, connected to the furnace draft door and damper, is actuated by the expansion of a sealed liquid, vaporized



by heat from a heater coil which is energized by a thermostat or other control.

The instrument functions promptly with ample throw and power for full damper movement. A notable safety feature of this control is that it will always return the system to the checked position in case of power failure, a broken wire or any possible damage to the hydraulic system.

This control is sold either separately or in package sets.

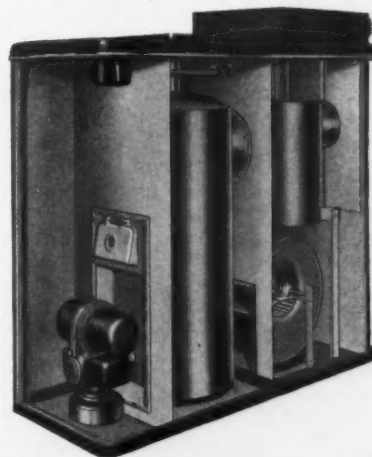
103—Flameproofed Insulation

The Pacific Lumber Co., 100 Bush St., San Francisco, has a new "Saferized" flameproof process for treating the redwood bark fibers from which "Palco Wool" insulation is made. This process augments the inherent fire resistant qualities of the bark of the redwoods.

The wiry resilient fibers of redwood bark are removed from the solids in which nature has embedded them. Especially designed machinery and equipment have been installed and all insulation now being shipped is subjected to the flameproofing process as a regular step in its manufacture.

104—A. C. Toridheet

Toridheet Division, Cleveland Steel Products Corporation, Madison at West 74th St., Cleveland, announces a new Toridheet air conditioning furnace, completely automatic, designed for low heating cost in large or small



homes, six sizes with register capacities of 65,000 to 175,000 Btu.

The Ropeller burner comes factory installed. Model "S" pressure atomizing burner is also available for those who prefer the gun-type burner. Installed with the Ropeller burner is the wall wiping fire ring. This fire ring is the combustion zone for mixing vaporized oil and air and converting it into a soft, clean-burning flame. Oil is sprayed in myriads of tiny particles to the fire ring where it is mixed with air and ignited electrically. The intense hot flame is held in close contact with the heat absorbing surface of the furnace walls.

The smallest of the six models is 26x62—60 inches high and has a 7½ inch blower; the largest is 36x78—67 inches high and has a 16¼ inch blower. Motor sizes run from 1/6 to ½ hp. All models come equipped with filters.

The cabinet is finished, both inside and out in a splatter, baked, two-tone blue lacquer. The trim is stainless steel.

105—Reyn-O-Cell Insulation

Reynolds Metals Company of Richmond, Virginia, offers a new building insulation made of water-repellent cotton that has been treated to be flame-proof and fire-resistant, manufactured in accordance with specifications issued by the United States Department of Agriculture, under direct U. S. government inspection.

Reyn-O-Cell is to be supplied in blankets 16 to 24 inches wide, 1 to 3½ inches thick, to be cut to lengths to meet conditions in building construction. The material will be sold alone or with asphalt-impregnated paper backing, or in combination with reflective metal insulation (Aluminum foil). Five of the six types of Reyn-O-Cell offered are produced in mounted form, with flanges for fastening to the rafters, joists, or studs.

New Products

For your convenience in obtaining information regarding these items, use coupon on page 102.

•106—Automatic Water Heater

Airtemp Division of Chrysler Corporation, Dayton, Ohio, announces a new automatic, oil-burning water heater. The new heater makes use of a patented vaporizing oil burner. Two stainless steel baffle plates and the arrangement of air intake ports under each make for a mixture of oil vapor and air, with a resulting clean burning flame.

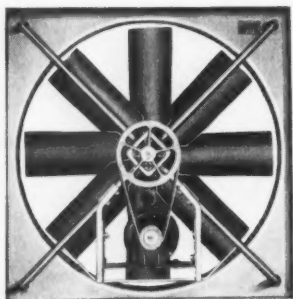


An oil control meters the amount of oil required by a thermostat.

The heater is available in 20, 30, 40 and 50-gallon capacities. All models are finished in white enamel with black trim.

•107—Re-Designed Allvent

Autovent Fan & Blower Company, 1805 N. Kostner Ave., Chicago, has improved through re-design their Allvent V-Belt drive fan by changing to a multiple-bladed unit in place of the three-bladed construction. The new blade assembly is designed to over-

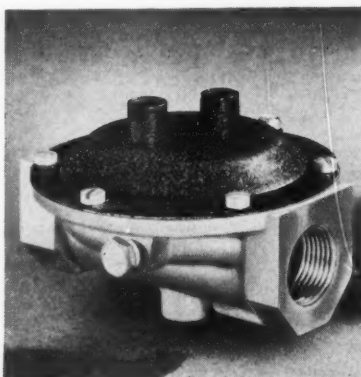


come normal restrictions in the air flow, to prevent "churning" the air, and at the same time to absorb shocks and sudden changes in air loads. The fan operates with "V"-belt drive from standard speed (1725 rpm) motor.

The Allvent is furnished in capacities of 5,000 to 23,000 cfm inclusive, and bears certified ratings of National Association of Fan Manufacturers and American Society of Heating and Ventilating Engineers.

108—Diaphragm Gas Valve

General Controls Co., 801 Allen Ave., Glendale, California, announces a small, compact fail-safe diaphragm gas valve for operation where damper arm control is not needed. These



valves are offered for standard I. P. S. as small as $\frac{3}{8}$ inch and in all other sizes up to 3 inch, inclusive.

Listed as Series B-101, the new valves embody improvements on the original B-100. They include internal gas ways and interchangeable orifice as integral parts. The compact design makes these valves adaptable to any type of pilot valve, either direct, reverse or three-way.

•109—Heat-Director Heaters

Perfection Stove Company, 7609 Platt Ave., Cleveland, announces a number of mechanical improvements, but only slight changes in the style and finish of the 1941 line of Superfex oil burning space heaters. The chief change in the design of these



heaters is the addition of a prism of heat-resisting glass in one of the adjustable shutters, through which light from the flame is reflected, this prism being located in front of a window in the combustion chamber through which the flame can be observed.

The heaters with outer casings are so designed that they can be easily equipped with an electric blower.



110—Closet-Type Furnace

Fluid Heat Division, Anchor Post Fence Co., Eastern Avenue & Kane Street, Baltimore, is introducing a new vertical air conditioning furnace unit—Model RU-7—with a capacity of 70,000 Btu at the bonnet, for the cellarless home. Model RU-7 heats, humidifies, circulates and filters the air and occupies a space 20 x 20 in.

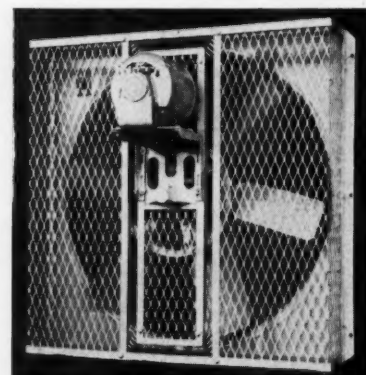
Line switch, primary control and combination fan-limit switch are mounted on the unit at the factory.

Primary heating surface is 10 sq. ft. with $12\frac{1}{2}$ sq. ft. of secondary heating surface.

Fluid Heat's Model P-3C burner, fired with an .85 OPH nozzle at 100 lbs. pressure, is field mounted. The unit is equipped with 15 x 20 x 1-inch spun glass filter or a screen of expanded metal to fit the return intake.

•111—Coolair Window Fan

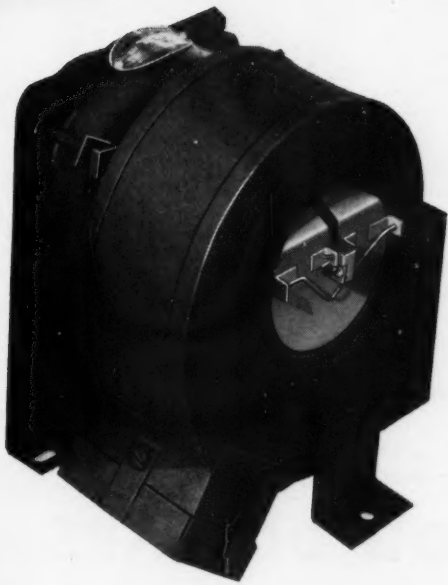
American Coolair Corp., Jacksonville, Fla., announces an improved Coolair window fan. The Type 28-W window fan is a complete window fan unit, ready for mounting and operation. Side mounting flanges fasten directly to inside or outside frame of any ordinary size window with six



screws. May be placed in upper or lower half of window without interfering with normal operation of window sash. Safety guard shields all moving parts. Adjustable diameter motor pulley permits changing fan speed. Finish is light ivory.

FURNACE VAPORIZING BURNERS

give new possibilities



Furnace vaporizing burner units are gaining in popularity because they combine low initial cost and economical operation with satisfactory performance—a result that can now be expected when "Genuine Detroit" oil burner controls are used.

No longer is it necessary to depend on the chimney to produce a draft sufficient for proper combustion. This essential but uncertain factor need cause no concern on jobs that are equipped with "Genuine Detroit" combination air and fuel delivery control units.

It is important information for the dealer to know that the control of air and oil delivery are factory set, the complete unit ready for installation and operation when received from the manufacturer.

Made to meet the control requirements of vaporizing burners, "Genuine Detroit" furnace controls are available in the various types and combinations demanded by the industry.



DETROIT LUBRICATOR COMPANY
General Offices: DETROIT, MICHIGAN

Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, Montreal, Toronto, Winnipeg





We Spent Thousands . . . TO SAVE YOU DOLLARS!

THE STORY OF A HUGE INVESTMENT THAT ELIMINATED "DOUBTFUL" SCREWS

COSTS NO MORE to get
this Parker-Kalon Quality-Control
Guarantee with every box of . . .



**Hardened Self-tapping
Sheet Metal Screws**

Sizes and head styles for assembling light and heavy sheet metal



Hardened Screwnails

For fastening sheet metal to wood securely

**Hardened
Masonry Nails**

For fastening to brick, mortar, concrete, etc. easier and quicker

It isn't going to revolutionize your business to specify Parker-Kalon products and stick to 'em through thick or thin. But it is going to save you dollars, hours of time, and a lot of cussing. You might as well have the saving. Here's why:

In a box of ordinary screws, you may get just a few that don't work right. They're hard to start. Or they won't draw up tight. Or they strip threads, or break. That makes the whole box "doubtful" screws. Any one of them may cost you time - and money.

Long after we at Parker-Kalon had invented hardened self-tapping screws, and introduced them, we saw

that we could take another big step if by eliminating these "doubtful" screws from every box that bears our label. We invested a lot of money to set up the industry's finest quality-control laboratory to do the job. We did it.

That is why every screw in a Parker-Kalon box works right and holds tight. That is why we can give them a quality-control guarantee that means what it says. And that is why you can use them and be sure that every one will live up to *your* reputation for sound, honest work, shipshape down to the last detail. Parker-Kalon Corporation, 190-192 Varick St., New York City.

SOLD ONLY THROUGH RECOGNIZED DISTRIBUTORS

PARKER-KALON
Quality Controlled
FASTENING DEVICES

New Literature . . .

For your convenience in obtaining copies of new Literature use the coupon on page 102.

170—The Staynew Filter Catalog

Staynew Filter Corporation, 25 Leighton Avenue, Rochester, N. Y., announces the publication of a new 44-page catalog, illustrating and completely describing the latest Staynew and Protectomotor filters for compressed air, gases, liquids, engine and compressor intake, and for building ventilation. The new catalog is replete with photographic illustrations, sectional drawings, diagrams, specification charts, and detailed engineering data, and is mailed, without charge, to representative firms requesting on their business letter heads.

171—Explosion Proof Motors and Hazards

Century Electric Company, 1806 Pine St., St. Louis, is distributing catalog sheets covering explosion proof motors and the different classes of Underwriters' labels to meet varying degrees of explosion hazards encountered, and to help select the proper motor for a specific class and group of explosion hazards.

These motors are grouped into Class I, Group D, atmospheres containing gasoline, petroleum, naphtha, alcohols, acetone, lacquer solvent vapors and natural gas; and Class II, Group G, atmospheres containing grain dust.

172—Pyrocycloid Combustion Chamber and Burner

The Hipoint Corporation, Water, Elm and Arnold Sts., Bellefontaine, Ohio, is distributing a 2-page folder picturing and describing the A-2-DD burner combined with the Pyrocycloid combustion chamber, which is made of special high heat-resisting Armco chrome-steel.

The unit is easily installed in almost every style of furnace. The combustion chamber is available in small medium and large size for heating requirements up to 900 sq. in. warm air and 2,500 cu. ft. per min. of forced warm air. The unit burns standard grades of fuel oil No. 1, 2 or 3.

173—Ryerson's 1941 Stock List

Joseph T. Ryerson & Son, Inc., 16th and Rockwell Sts., Chicago, has published their 1941 stock list of 268 pages—their largest and most complete steel buyer's guide—including new products, new analyses, and new sizes, plus an increased number of helpful charts and tables. In addition to a listing of all Certified Steel products carried in stock, the book contains SAE standard specifications, a physical properties chart showing machinability of more than 50 steels, standard gauge comparisons, weight tables, and other helpful data.

An enlarged complete main index, handy thumb tab margin indexes, helpful sub-indexes on all tab pages, eye-conditioned paper, and a mechanical binding that assures flat, easy-turning pages are mechanical features.

The book is published in ten editions, and a request on a business letter-head brings a copy.

174—Mountaineer Profit Opportunities

Gale Products, P. O. Box 470, Galesburg, Illinois, is distributing a folder calling attention to profit opportunities from the sale of the Gale Mountaineer air conditioners for cleaning, cooling and dehumidifying the air. The Lake Louise and Lake Placid models are pictured and described.

Consumer Literature

Sleep Well Tonight—Autovent Fan & Blower Company, 1805-27 North Kostner Ave., Chicago, is offering a folder for dealer distribution showing the Coolvent attic fan and illustrating how it works. The Autovent kitchen fan is also shown. Coupon No. 175.



**"I MAKE MONEY
ON EVERY JOB
...no 'doubtful screws'
to push up my costs"**

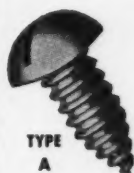


**"You can't beat genuine Parker-Kalon Screws
for better fastenings every time!"**

Of course, you are no different from other good sheet metal workers. You want to steer clear of anything that threatens your profit or quality of work. That is why it will pay you to demand only genuine Parker-Kalon Sheet Metal Screws . . . for then you will be sure to avoid "doubtful screws"—screws that look all right but of which a percentage fail to work satisfactorily and run up costs.

Every Parker-Kalon Screw you use is backed by more than 25 years of sheet metal screw-making experience, and *Quality-controlled* through every step of manufacture by the famous Parker-Kalon Laboratory. So to be certain of getting better fastenings and the profit you figured on, insist on genuine Parker-Kalon Screws.

Parker-Kalon Corporation
190-192 Varick St., New York, N. Y.



Quality-Controlled

**TYPES, SIZES, HEAD-STYLES
FOR EVERY
SHEET METAL ASSEMBLY**



SOLD ONLY THROUGH RECOGNIZED DISTRIBUTORS

SEND FOR SAMPLES

PARKER-KALON
*Sheet Metal
Screws*

Parker-Kalon Corporation,
190-192 Varick St., New York, N. Y.
Send Free Samples of Type A and
Type Z Screws.

Company Name

Address

City & State



This motor driven Niagara Combination Machine with interchangeable rolls offers the modern sheet metal worker power operation at a minimum cost. No longer necessary to hold and guide the work with one hand while the other turns the crank. Rotation of rolls is controlled by hand or foot operated clutch. When desired, clutch can be locked for continuous motion. Upper roll may be raised and lowered by foot treadle or crankscrew. Work feeds from left to right.

One machine performs Burring, Turning, Wiring, Beading, Crimping, Elbow Edging, Slitting and other operations. Rolls are quickly interchangeable. Write for Bulletin 75-A. Niagara Machine & Tool Works, General Offices and Factory, 637-697 Northland Ave., Buffalo, N. Y. Branches: New York, Cleveland, Detroit.

New Literature

For your convenience in obtaining copies of new Literature use the coupon on this page.

176—Floating Power Oil Burner

The Hipoint Corporation, Bellefontaine, Ohio, is distributing a 4-page folder covering their floating power oil burner. Specifications are included.

177—Soldering Allegheny Metal

Joseph T. Ryerson & Son, Inc., Glyco Department, 16th & Rockwell Sts., Chicago, is offering a bulletin entitled "Instructions for Soldering Allegheny Metal," after considerable research and experimental work in developing special solders and flux for soldering stainless steel (18-8 stainless).

178—Strato-Limator for No-Draft Circulation

Wilster Air Devices, Inc., 5700 Detroit Avenue, Cleveland, is distributing a 4-page circular covering the Strato-Limator for summer and winter air circulation. The Strato-Limator filters the air and is thermostatically controlled to prevent ceiling temperature exceeding 80 degrees.

179—Controls for Heating and Air Conditioning Equipment

Sampsel Time Control, Inc., Spring Valley, Illinois, has issued a new catalog of controls for heating and conditioning equipment—complete with wiring diagrams and prices. The new catalog is designed to enable the purchaser to locate quickly and easily complete price, engineering and installation specifications on the type of control needed.

180—Spray-Painting and Finishing System

The DeVilbiss Company, 300 Phillips Avenue, Toledo, has just issued a new catalog covering, in condensed form, its complete line of standard spray-finishing equipment for industrial use.

The new catalog, called the "IE," replaces catalog "ID-A," and brings all prices and specifications of the company's industrial line up to date.

181—"Night-Cool" House or Apartment

Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago, is distributing a 4-page folder entitled "Night-Cool Your House or Apartment." The Ilgwind night cooling fan may be plugged-in in the attic or a window of an apartment to start a cross-circulation of air through the house or apartment. The fan drives out the sweltering blanket of day-time heat and pulls in night-time air through other windows.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

94	95	96	97	98	99	100
101	102	103	104	105	106	107
108	109	110	111			
170	171	172	173	174	175	176
177	178	179	180	181		

Name

Company

Address

Are you Manufacturer—Jobber—Dealer—



the BEAUTY of PRE-FINISHED METAL SHEETS AND COILS

...is the **NEW JOBS** they
create for you!

Alert sheet metal men are creating new jobs—greater profits for themselves—with American Bonded Pre-finished Metals. In the fields of interior decoration, displays, signs, and many more, these men are creating new jobs on the appeal of the many striking patterns, and the proven durability of the bright or satin finishes of these American Bonded Metals. And the metal is easy to work with, too. We can supply sheets up to 36" x 96", strips cut to order or long continuous coils. Where you have special problems, write and ask our metallurgists. In your regular "bread and butter" work, too, you'll like American Bonded Pre-finished Metals. Our complete line of metals is listed at left. Here's opportunity! See your jobber or write direct for literature.

A COMPLETE LINE OF PRE-FINISHED METALS

Chrome Zinc	Chrome Steel	Chrome Brass
Brass Zinc	Nickel Steel	Nickel Brass
Copper Zinc	Brass Steel	Chrome Copper
Nickel Zinc	Copper Steel	Nickel Copper

AMERICAN NICKELOID COMPANY
22 SECOND ST. PERU, ILLINOIS

KLAUER

*Profit
Tips*



**SPEED WORK!
SAVE TIME!
SATISFY CUSTOMERS!
BOOST SALES!
CUT COSTS!
MAKE MONEY!**

No Cut-throat Competition ON KLAUER PRODUCTS!

**NO SALES TO
CHAIN STORES OR
CATALOG HOUSES**

When you quote on Klawer Sheet Metal Products you can rest assured that chain stores or catalog houses will *not* be offering the same line, even under another name. For Klawer products go *only through legitimate channels of trade*, to jobber, to dealer to consumer, with everyone reaping benefits!



For Wood



For Wood

One Example CONDUCTOR HOOKS

Klawer's top-flight quality is indicated in these all-steel, hot galvanized hooks which can be driven into any type wall without breaking or bending. Get prices on complete Klawer line — NOW!



For Brick



For Brick

Klawer SINCE 1870

Jobbers! Attractive franchises now open — write today

MANUFACTURING CO., DUBUQUE, IOWA



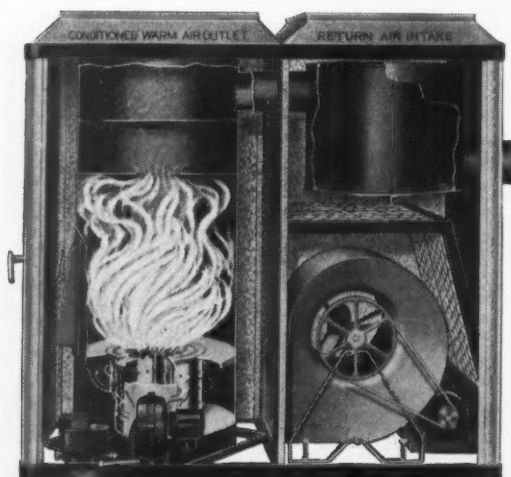
- Roofs and Box Gutters, Valleys, Flashing
- Sheet Steel, Corrugated Sheets
- Skylights, Stock Tanks

- Ventilators and Cupolas
- Eaves Trough, Conductor Pipe and Trimmings

- Metal Ceiling, Pressed Siding, Rolled Roofing
- Metal Lath and Corners
- Ridding, Corners, Battens, Shingles

Just What
EVERYONE
Is Looking For

LOW COST AUTOMATIC OIL HEAT



The MONOGRAM Winter Air Conditioning Furnace

The finest type of automatic heating service available at a lower cost of both installation and operation. A positive fuel saver, producing the highest known operating efficiency of over 80%. This is the last word in automatic oil furnaces providing a clean, healthful invigorating air properly filtered and humidified.

The MONOGRAM Full Forced Winter Air Conditioner is 100% automatic and features the exclusive MONOGRAM "Vaporizing" Burner which produces a clean, quiet gas flame made from oil. Burner has two-stage operation, Low and High Fire, assuring a constant flow of warm air through the ducts at all times, thereby overcoming the so-called "Cold 70."

Heating drum has a Double Baffle made possible by the short, wide flame produced by the "Vaporizing" burner. Double baffle stops rush of heat up chimney, increases efficiency and creates a lower heat zone resulting in faster circulation. Only MONOGRAM has the Double Baffle for only MONOGRAM has the "Vaporizing" burner which produces such a clean, efficient flame. Write today for full particulars on the complete line of MONOGRAM Automatic Oil Furnaces.

44th YEAR OF QUALITY

The Quincy Stove Mfg. Company
Quincy • • • Illinois

With the Manufacturers . .

Sheet Distributors 30th Annual

The 30th annual meeting of The National Association of Sheet Metal Distributors was held at the Hotel Cleveland, Cleveland, on May 20 and 21.

Considerable time was devoted to the Defense program. Harold F. Seymour of the Office of Production Management spoke on "The Distributor and the Defense Program," and R. C. Allen of the Office of Production Management talked on "The Role of Minerals in National Defense." General Metals Order No. 1 was discussed and the Secretary was instructed to obtain full and complete information and place it before members in bulletin form.

The Secretary is also to call to the attention of the Priorities Division the fact that considerable nickel bearing steel of lighter gauges is frozen because of restrictions on its sale to other than defense plants.

Following the report of Eugene Foley, chairman of the Prepared Roofing Committee, it was suggested that the secretary obtain figures as to the tonnage sold by members and compile a list of unsatisfactory practices surrounding the distribution of prepared roofing. This information is to be placed before the committee in report form, that they may discuss the prepared roofing situation with manufacturers.

At the opening session, those present were advised that Thomas A. Fernley, Jr., was selected Secretary-Treasurer, George A. Fernley serving as Advisory Secretary-Treasurer.

Thomas A. Fernley, Jr., Secy.-Treas.

Stoker Manufacturers Meet

Leading stoker manufacturers from all parts of the United States gathered at White Sulphur Springs, West Virginia on May 26 and 27 for the twenty-fourth annual meeting of the Stoker Manufacturers Association and pledged their full support to the nation's defense and emergency program.

Leaders in the stoker industry, meeting with representatives of allied industries and suppliers of raw materials used in stoker manufacturing, discussed the effect of priority, materials shortage, and the labor problem on stoker manufacturing and production in relation to the present sales and merchandising problems. "What's Ahead for Stokers?" was the convention theme at the two-day's session, with one of the features being a "Stoker Sales Information, Please." Six prominent sales managers comprised a board of experts and covered practically every phase of stoker sales problems in connection with new conditions being created as a result of national defense.

With stoker sales ahead about 70 per cent for the first five months of this year as compared to the corresponding period in 1940, members of the Association expect a record-breaking sales year, unless priority and other defense requirements or emergency conditions interfere to any great extent with the plans and sales programs of the different manufacturers.

Frank Hoke, Indianapolis, vice president of Holcomb and Hoke Manufacturing Company, was re-elected president. Also re-elected were B. O. Fink, Auburn, Indiana, president, Auburn Foundry, Inc., as vice president; and J. M. McClintock, Chicago, manager, Stoker Division, Illinois Iron & Bolt Company, as treasurer. Marc G. Bluth, Chicago, was re-appointed secretary.

J. E. Martin, Chicago, Manager Stoker Division of the Link-Belt Company, won the association's new championship golf trophy. Albert Penn, Goshen, Indiana, president of the Penn Electric Switch Company, won the cup for low gross score of Associate Members.

About 75 attended the convention.

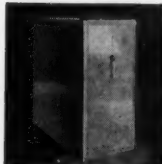
Amirton in New Location

Amirton Company, Inc., manufacturers of air filters, announces the removal of their offices from 60 East 42nd Street to 27 Pearl Street, New York City.

1941's HOTTEST LINE!

Conco

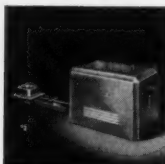
Again Conco scores with a complete new gas-fired line — airconditioners, gravity furnaces, floor and wall heaters. The new, powerful airconditioner at right comes in five sizes — in two models — to sell to any size home. Its companion unit — a beautifully engineered gravity furnace — is also available in a complete range of sizes. Write today and get the facts on Conco's new 1941 line of coal, oil and gas-fired equipment.



Conco Oil-Fired Airconditioners



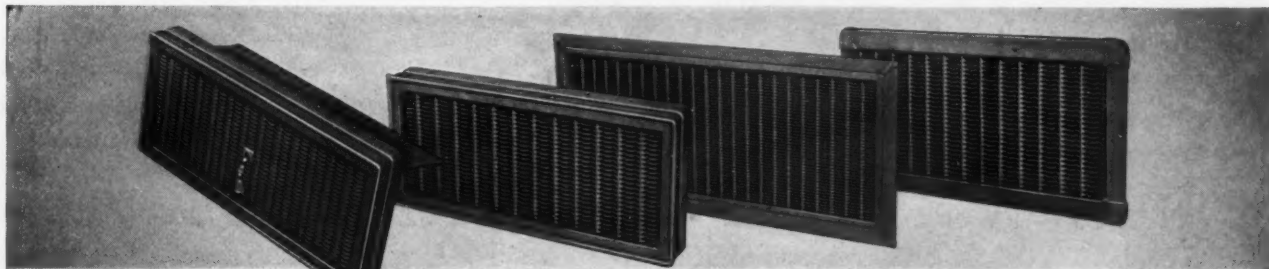
Conco Conversion Oil Burners



Conco Clipper — Low Cost Stoker



CONCO CORPORATION
70 EUCLID AVE. MENDOTA, ILLINOIS



uni-flo

GRILLES AND REGISTERS



ARE TAILORED TO YOUR REQUIREMENTS...

WHAT "ENGINEERED AIR DISTRIBUTION" MEANS...

Barber-Colman engineers use data based on an elaborate series of laboratory tests to specify the size and fin arrangement of each grille individually, taking into consideration all the specified conditions, and thus providing a pre-planned set of Grilles and Registers which can be guaranteed to give the desired performance.

● UNI-FLO gives you ENGINEERED AIR DISTRIBUTION, specifically planned for the particular building in which the installation is to be made. Each job receives individual engineering attention, insuring that all conditions will be adequately met. In this way, every UNI-FLO job is "tailored" to fit exactly the existing requirements. Furthermore, UNI-FLO installations are backed by a *guarantee of satisfactory performance* which assures the user of correct air distribution.



WRITE FOR THIS NEW CATALOG
It contains full descriptions and illustrations of all UNI-FLO Grilles, Registers, and Accessory Items.

1226 ROCK ST. **BARBER-COLMAN COMPANY** ROCKFORD, ILL.

There's a lot of profitable **FILTER** business . . .

feature the

RESEARCH AIR FILTER

The filter that really cleans the air . . . takes out dust, dirt and lint with efficiency that actually increases through service. Re-Fil-Able and Throw-Away types.

Complete Dealer Cooperation

Business building direct-mail campaigns, smart newspaper advertising mats, eye-catching display material—all are furnished free to Research Filter dealers. Write for further information.



The "100" Research Series

A disposable filter that is replaced, frame and all, when it is filled with dust. Adaptable to warm air furnaces, air-conditioning units, window ventilators, filter banks, etc.



Research also features Self-Seal Re-Fil-Able and Steel Frame Filters. Write for free catalog sheets.

RESEARCH PRODUCTS CORP., MADISON, WIS.

SELECTAIR HEAT and AIR CONDITIONING UNIT

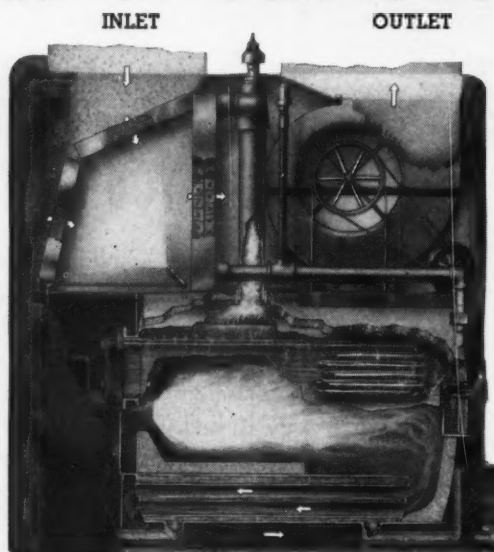
A NEW WORLD OF COMFORTABLE LIVING

That is what you are actually selling when you prescribe, sell, and install a Johnson **SELECT-AIR**. It flows immaculately clean air, properly moistened, with no noticeable effort or noise. **SELECTAIR** brings quiet, cool air in summer and warm heated air in winter and holds satisfied customers for years.

Air conditioning sales have doubled every 3 years and should continue to increase at the same rate for 20 years more before they start to level off.

Get your share of this profitable business with

SELECTAIR



BOILER—Heavy elect. weld copper steel; **BURNER** — Pressure atomizing type Johnson "Bankheat"; **AIR FILTERS**—Very efficient, dry type spun glass; **HUMIDIFIER**—Humidistat controlled spray type; **HEAT EXCHANGER** — copper tube and fin construction; **CIRCULATING FAN**—Multivane, double inlet; **MOTOR**—1/4, 1/3, or 1/2 H.P. to suit each of 3 size units. The instantaneous type domestic water coil gives a continuous supply of hot water the year 'round.

SEND FOR SELECTAIR DATA SHEET No. 1

S. T. JOHNSON CO.

940 Arlington Ave., Oakland, Calif.
401 N. Broad Street, Philadelphia, Pa.

With the Manufacturers . .

New Inland Steel Officers

Wilfred Sykes was elected president of the Inland Steel Company, succeeding Philip D. Block, at the directors' meeting following the annual meeting of the stockholders held in the Company's offices on April 30. Mr. Block, who has been president of the Company for the past



Wilfred Sykes Philip D. Block James H. Walsh

twenty-two years, was elected chairman of the executive committee.

L. E. Block, who served as chairman of the board for many years prior to 1940, was elected chairman of the finance committee.

James H. Walsh was elected vice president in charge of steel works.

Edward L. Ryerson, chairman of the board, and all the other officers were re-elected.

Allegheny Ludlum Los Angeles Warehouse

Allegheny Ludlum Steel Corporation, Brackenridge, Pa., purchased some time ago 25,000 square feet of ground at 4915 Pacific Boulevard, Los Angeles, served by independent spur trackage, and has now erected a modern combined office and warehouse building, designed especially for the prompt and efficient handling of steel requirements.



The building proper is 80 x 140 feet, representing 11,200 square feet of floor area. Approximately 1,600 square feet are utilized for office space, the remainder being devoted to warehouse purposes. Free area is available for future additional coverage of 100 x 160 feet.

Personnel Appointments

Leo J. Freitas—appointed distributor of air filters by the Research Products Corporation, Madison, Wisconsin, covering the state of Oklahoma. Mr. Freitas maintains headquarters at 4408 Stanhope, Dallas, Texas.

Branches and Jobbers

The Nu-Way Corporation, Rock Island, Illinois—Wm. F. Klockau, president—announces the following jobbers appointed during the past few months:

Seaboard Automatic Burner Corp., New Haven, Connecticut.
Ralph Payne Company, Jacksonville, Florida.
Brandon Electric Company, DeLand, Florida.
Central Oil Company, Inc., Tampa, Florida.
Smith Oil & Refining Co., Rockford, Illinois.
Winterbottom Supply Co., Waterloo, Iowa.
Century Oil Burner Service, Inc., St. Louis, Missouri.
Hightstown Plbg. Supply Co., Hightstown, New Jersey.
Briggs-Weaver Machinery Co., Dallas, Texas.

IT'S A *Smart Move* TO INSULATE DUCTS WITH **DUX-SULATION**

Saves 75% of
the Heat Loss.
K .27 B.T.U.

High Sound Ab-
sorption. 70% in
less than 10 lin-
eal feet.

Balances job.
Saves Fuel.
Quiets Noises.

Fire-Safe with
Asbestos Pro-
tection built in.

Made especially
for Air Condi-
tioning, Ventilat-
ing and Warm
Air Industries.

Prevents Con-
densation, Duct
Sweating, and
Duct Rust.

Inexpensive to
use. No material
waste. Built to
last and stand
hard usage.

Moisture proof
Surface. Mildew
proof Treated.
No rotting or
chipping.

Convenient to
handle in stock
or on job. Roll
contains 100
square feet.

Standard 1/2"
thickness is right
thickness for
most jobs.

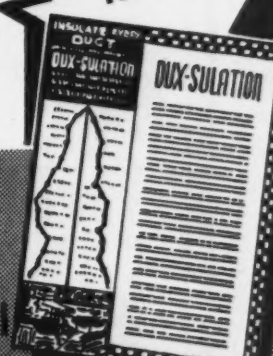
Easiest insula-
tion to apply
and looks best.

Low frictional
resistance.
Smooth surface.

Can be applied
on inside or out-
side of round or
rectangular
ducts.

Comes Com-
plete, ready to
apply. No extras
to buy.

Free
BULLETIN
No. 404



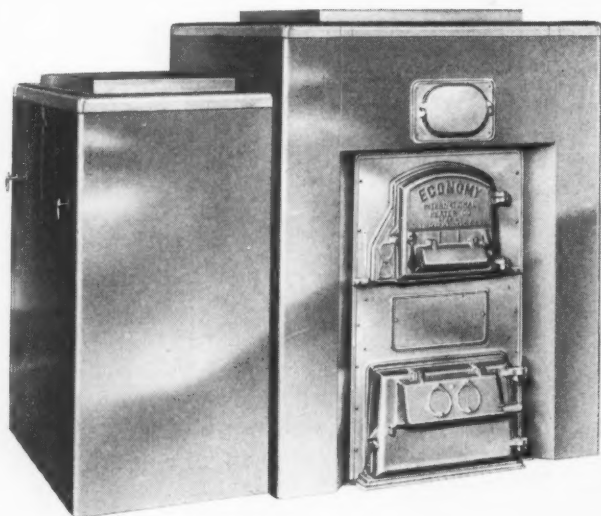
YOUR COPY OF THIS VALUABLE
BOOK ON CORRECT DUCT IN-
SULATION IS READY.

WRITE FOR IT TODAY!

GRANT WILSON INC

4101 TAYLOR STREET

CHICAGO, ILLINOIS



ECONOMY JACKETED AIR CONDITIONING UNIT

New beauty — new economy — new comfort in the Economy Jacketed Air Conditioning Unit. Made by specialists in heating equipment for over 100 years. Central heating unit tried and proven over a period of years and protected by our Ten Year Maintenance Agreement. Rated according to national code. Quiet, powerful blower. Available in round or square case. Variety of humidifiers and controls to choose from. While designed primarily for solid fuel, can be easily adjusted to the use of oil and stoker. Jacket design is such that blower may be installed on either side or the back—which-ever is better for your installation.

Write to Dept. A-6 for literature on the Economy Jacketed Air Conditioning Unit and other proven International Products.

INTERNATIONAL
HEATER & CO. COMPANY
UTICA, N.Y., U.S.A.

WESTERN OFFICE AND WAREHOUSE • 1933 WENTWORTH AVE., CHICAGO, ILL.
NEW ENGLAND OFFICE AND WAREHOUSE • 110 CHESTNUT ST., NASHUA, N. H.
STOCKS CARRIED WITH WHOLESALE IN ALL PRINCIPAL CITIES

With the Manufacturers . . .

George R. Munschauer of Niagara Machine & Tool Works

George R. Munschauer, president of the Niagara Machine and Tool Works, Buffalo, N. Y., died April 24, at the age of 61 years, after a three month illness. Mr. Munschauer had been associated with the company for 44 years and had served as its president for 23 years.



New Research Products Plant

Research Products Corporation of Madison, Wisconsin, announces the completion and operation of a new plant for its Air Filter Division, designed along straight line production plans.



Econ-O-Col stokers packed for export shipment to M. R. Koval & Co., Capetown, South Africa, by the Econ-O-Col Stoker Division, Cotta Transmission Corporation, Rockford, Illinois.

Macrae Incorporated Changes Name

The firm name of Macrae Incorporated has been changed to H. J. Hueller Manufacturing Co., Inc., company officials announce. H. J. Hueller remains as president. Sole owners of Macrae oil burner patents, the company will continue to manufacture Twin Control oil burners.

The new location is the company's own building at 559 Rogers Avenue, Brooklyn, N. Y.

Gerett Repeats Free Anvil Offer

The M. A. Gerett Corporation, 2947 N. 30th St., Milwaukee, manufacturer of the popular E-Z-On damper regulators, is again enabling dealers to receive their setting anvil at no cost.

The setting anvil is offered free to dealers with a single purchase of one full gross or more of E-Z-On damper regulators from authorized jobbers.

This offer is good for the month of July only.

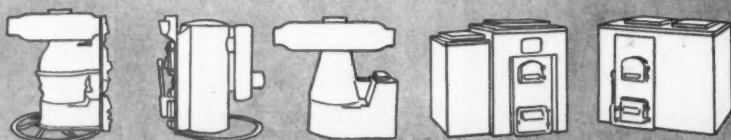
Byers to Manufacture Alloy Steel

A. M. Byers Company, Pittsburgh, will enter the field of alloy steel manufacture about June 15, when its new electric furnace equipment will be placed in operation.

Available alloy steel production for America's defense needs will then be increased by another 30,000 to 40,000 tons a year, according to L. F. Rains, president.

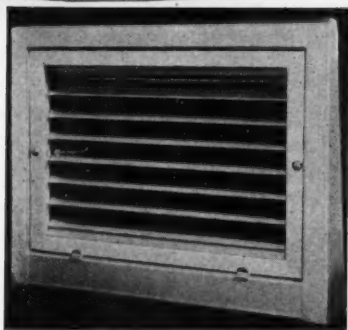
Construction of a plant addition and the installation of electric furnace equipment at the Byers Ambridge works have been speeded because of the shortage of alloy steel in the present emergency.

Initial products will be billets and bars for alloy steel fabricators.





FOR GRAVITY AND FORCED AIR SYSTEMS



• Waterloo's popular H-400 Register, illustrated, offers exceptional quality and performance at very reasonable cost. The horizontal multilouvres operate from full open to closed by means of a convenient handle lever. Modern-type louvres are designed to conceal the duct and to direct the flow of air. The face of the register may be quickly removed and inverted thus making it equally suitable for cooling or heating where gravity systems are converted to forced air. Write for illustrated literature on Waterloo Registers for both gravity and forced air systems.

WATERLOO REGISTER COMPANY

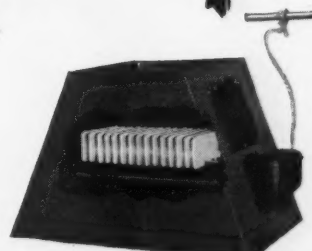
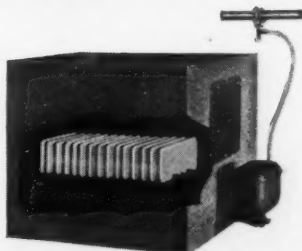
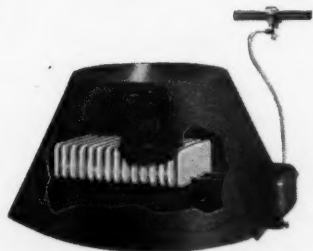
WATERLOO, IOWA SEATTLE, WASHINGTON

Representatives in principal cities.



HEY MISTER, HAVEN'T YOU HEARD
ABOUT SKUTTLE'S NEW ADJUSTABLE
COLLAR?

... it fits any type of **BONNET
ROUND, SQUARE or TAPERED!**



● Yes sir, Mr. furnace dealer, humidifier collars can become antiquated too! Why don't you go modern, like hundreds of other dealers and install this new streamlined model Skuttle Series 300 automatic humidifier on those replacement jobs? Its new ad-

justable collar will save you a lot of grief in tight spots where regular collars won't work. And don't forget, each Skuttle Series 300 has the famous VAPOGLAS all glass evaporating plates as standard equipment. Why not order a unit today and save on installation costs?



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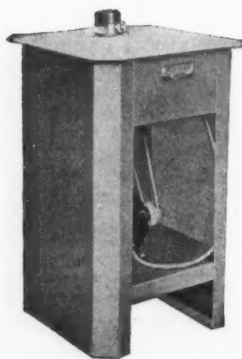


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Makes Pittsburgh Locks on 24 gauge metal or lighter. Power Flanger Attachment makes Right Angle Flanges on either straight or curved pieces. Inexpensive, easily portable, plugs into any electric light socket.

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Makes Right Angle Flanges on 18 to 24 gauge metal on either straight or curved pieces to a radius as small as 1 3/4 inches. No starting edge needed.

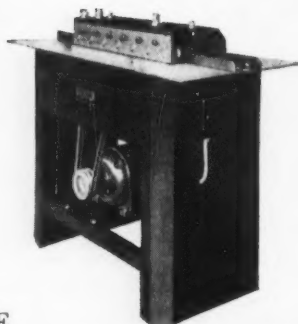


LOCKFORMER 18

Makes Pittsburgh Locks, Double Seam Locks, Drive Cleats and Right Angle Flanges on 18 to 24 gauge metal. An extremely heavy duty machine designed primarily for heavier gauges.

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Makes Pittsburgh Locks, Double Seam Locks, Drive Cleats and Right Angle Flanges on 22 to 28 gauge metal. A versatile, "all around" machine priced low enough to be practical for even the smaller shops.



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CATALOG SHOWING THE
COMPLETE LOCKFORMER LINE.

THE LOCKFORMER CO.
4015 ARTHINGTON STREET, CHICAGO, ILLINOIS

Konzo-Method For Gravity Systems

(Continued from page 63)

common types of, or methods of, installing return duct systems will be shown. Each of the five types will be accompanied by a simple rating table expressed in terms of Btu. per hour serviced by the return system. It is not sufficient that the sum of the areas of the return air duct system be made the same as the sum of the areas of the leader pipe. If a restricted return air duct system is used, the sum of the return air ducts should be *much greater* than the sum of the areas of the leader pipe. The use of the Rating Table will avoid the necessity of making any area determinations. The selection of the return duct system, including the grille size, will be greatly simplified and will, in addition, give more satisfactory results than are now obtained.

The selection of furnace size by the proposed Btu. method is also simple. Furnace ratings now based on the Gravity Standard Code can be converted to terms of Btu. per hour delivery by the use of a simple factor, as follows:

$$\text{Furnace Rating, Register Output, = } \left(\frac{\text{Standard Code Leader Area}}{\text{Rating}} \right) 136 \text{ Btu. per hr.}$$

There will be only one Btu. rating for a given furnace, and this rating will apply regardless as to whether the rooms to be heated are all on the first story, all on the second story, or on both stories.

The main purpose of the Rating Table is to provide factual data on performance in such a manner that the *design and installational procedure will be simplified*. This objective can be attained without disturbing too greatly the procedure stated in the Gravity Standard Code, and now in common use.

Part 3—Details of Installation

If the foregoing proposal is adopted by the National Warm Air Heating and Air Conditioning Association, a new publication is in order. It would be most helpful to attach to the preceding two parts, a section showing simple line diagrams of good installational practice as recommended by the Gravity Standard Code. Such diagrams have been prepared through the cooperation of Mr. H. H. Venzke, Jr., of Chicago, Illinois.

Summary

This proposal which is jointly sponsored by the Research Advisory Committee and the Installational Code Committee of the National Warm Air Heating and Air Conditioning Association is submitted to the industry as a constructive step toward elimination of waste, reduction of number of items being handled, simplification of design of



Knowledge . . . Experience

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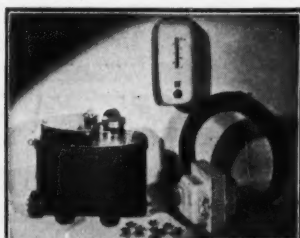
Today, in thousands of low-cost Homes, families are enjoying the last word in economical heating with popular Gravity Oil-Burning Furnaces—efficiently and accurately controlled by A-P Furnace Control Sets.

Trouble-free heating convenience is the one thing your customers demand of any Heating Plant. The wide knowledge and thorough experience of A-P Engineers in Fuel Control is helping many Manufacturers to a definite Guarantee of Heating Comfort and Economy—the kind of efficiency that keeps your customer satisfied through long years of use. . . . Saving you money on call-backs and extra service. . . . Adding a sense of confidence to every sale you make.

Look for these typical A-P Oil Controls on the Furnaces YOU sell. They mean satisfied customers.



A-P Thermostatic Furnace Control—Relay Type



A-P Thermostatic Furnace Control Set—Heat Motor Type

• Manufacturers! Write for information on A-P Fuel Controls for Oil Burning Furnaces, Heaters, and Ranges. A-P Engineering knowledge and experience will solve YOUR problems profitably.

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2452 NORTH THIRTY-SECOND STREET
MILWAUKEE WISCONSIN

NO BETTER NAME THAN **COLE**

Cole's Gas Fired Floor Furnaces Are the Quick-Selling Answer to Scores of Heating Questions

Selling Cole's Gas Fired Floor Furnaces pays big dividends in dollars and in customer satisfaction. In new homes for the finest in low cost automatic heat, sell Cole . . . for old homes, replacement jobs or for auxiliary equipment, sell Cole. NOW is the time to talk Cole's Gas Fired Floor Furnaces and NOW is the time for you to cash in on the demand for economical, trouble-free, dependable heat.



Cole Gas Fired Floor Furnaces are approved by the AGA. A full vitreous porcelain enamel inner heating unit assures the most in durability and efficiency.

Other features include large heating surface and long delayed flue travel for maximum heat from any gas; unit crimped and sealed by a patented process for gas tight and stay tight construction; three walled casing

of galvanized steel or full porcelain casing at small extra cost.

Combination safety pilot and automatic thermostatic control also available.

Write for full details today!



COLE HOT BLAST MFG. CO.
3108-26 WEST 51st STREET • CHICAGO, ILL.

GEHL Announces

NEW STOKER REFINEMENTS

In 1941 Models



New Domestic Hopper-fed model. Made in three sizes.

The stoker that made a 110% increase last year is now better than ever. The hopper of the Gehl new domestic model has been redesigned to set closer to the furnace, and provide extra clearance for the fire door.

A new HEAVY ALL-CAST-IRON CHASSIS gives the Gehl unusual rigidity and strength, eliminating vibration. The moisture and acids in coal have practically no effect on it. The greater thickness and natural resistance of cast-iron to rust and corrosion assures the Gehl a far longer life than if the usual sheet steel type of construction were used. The rounded corners of the retort are an advantage in furnaces with a round firepot. In addition to these refinements, the stoker has been further beautified with a smoother finish that's easier to keep clean.



Stoker sales are blowing a Gehl.

Extra values, National advertising, thousands of satisfied users, unconditional guarantee, are all selling aids that keep the Gehl out in front. WRITE today for new literature and our dealer plan.

GEHL BROS. MFG. CO.
Founded 1867 Dept. A, West Bend, Wisconsin

gravity heating plants, and betterment of installational practice.

The representatives of the fittings manufacturers and register manufacturers have contributed of their time and labor to insure that the proposal as presented is based on a practical foundation.

This proposal, incomplete as it may appear upon reading this report, is presented to this meeting in the sincere hope that enough interest and backing is shown to warrant finishing up the job.

Furnace Men and "Seasonal" Exemption

(Continued from page 57)

ments. Nor can fulfillment of such an agreement be offered as an excuse for Wage-Hour violations.

One purpose of the Wage and Hour Law is to spread work, to put to work as many of the Nation's six or eight million unemployed as possible. The time and a half requirement has resulted in the hiring of thousands of these, but if employers prefer to pay time and a half rather than enlarge their forces, it is entirely up to them.

Many employers have felt the Act is too much for the *employee* and not enough for the *employer*.

QUALITY EQUIPMENT--FROM HESS-- COSTS LESS

DEALERS---Write for our New 1941 Portfolio

By selling — repairing, modernizing or replacements, needed by owners of a majority of heating plants now in use.

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HESS BLOWER FILTER UNITS
HESS WELDED STEEL FURNACES
HESS AUTOMATIC OIL BURNERS
HESS AUTOMATIC COAL STOKERS

ARE GREATEST VALUES
AT LOWEST PRICES

• • • • •
The Hess line is complete for every dealer requirement, distinctively different and more saleable. Financing plan and territory plan—helps Hess dealers.

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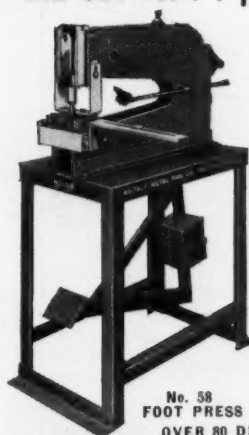
In this they are wrong. The days are now gone when a fair employer has to close his shop because the John Doe Company, down the street, makes its employees "pay for the privilege of working," while the fair employer has paid his men decent wages and so cannot meet Doe's competition. Under the Wage and Hour Law, all employers who are covered by the law in a given industry now are on an exactly equal level, at least insofar as basic wage rates are concerned. If furnace man "A" can quote to a prospect a lower contract price than furnace man "B," he can do it nowadays only on the basis of better management or poorer materials—and the poorer material problem is easily solved!

For Wage-Hour Facts See A.A., Dec., 1940

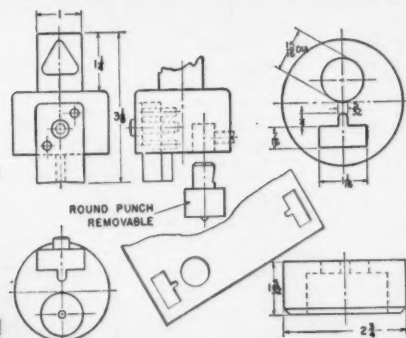
It is not necessary in this article to go deeply into the various requirements of the Wage and Hour Law, since the December, 1940, issue of *AMERICAN ARTISAN* carried a concise and practical digest of the Act. It seems necessary now only to say that prompt and complete compliance with every phase of the Wage and Hour Law on the part of the Nation's artisans—and in every other manufacturing or commercial establishment within the scope of the law—will result in better food, better health, and better homes for every American.

BUY WHITNEY-JENSEN
METAL-WORKING MACHINERY and HAND TOOLS
for LONG LIFE and ACCURACY

**SPECIAL
PUNCH and
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FLUORESCENT LIGHTING FIXTURES

Get in on this growing business! Standard socket holes for fluorescent lighting fixtures can be punched accurately, quickly, and economically with the Whitney-Jensen Punch and Die Set shown above. It is designed for use on our No. 28, 29, 58, or 68 Foot Press. Write for literature today.

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EASY TO CLEAN AGAIN AND AGAIN

That's a feature of AIR-MAZE Filter Panels that makes them so economical. They can be cleaned thoroughly *again and again*. Simply wash them with hot water. Then let them dry and re-charge them by spraying with a recommended adhesive oil.



They'll come out like new with all their original performance characteristics retained, ready for another long period of efficient, trouble-free service. This operation costs only a few cents and saves the expense of continual replacements of conventional filter panels.

Think of it—no more filter panels to buy during the life of your equipment!

AIR-MAZE Filter Panels are of sturdy all-metal construction and 99.3% to 99.83% efficient by actual test. *Approved by The Underwriters Laboratories.*

**THROWING
AWAY FILTER
PANELS IS
THROWING
AWAY MONEY**

Change over to permanent cleanable AIR-MAZE panels. Let them pay for themselves by doing away with bothersome and expensive *replacements*. You'll be doing your customers an appreciated service.

Write for Catalog GPC-740

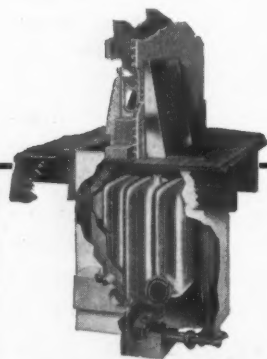
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DEALERS AND GAS COMPANIES everywhere praise PAYNE's wide range of double-tested gas heating equipment. Every one of the 69 styles and sizes reflects PAYNE engineering — craftsmanship — leadership. ☆ "Often imitated — never duplicated," say Dealers and Utility men, who daily rediscover the profit-making possibilities of PAYNE's versatile 69. ☆ As the Nation's largest exclusive manufacturer of gas heating equipment, we make you this pledge: You can stake your reputation on the performance of PAYNEHEAT.



A few territories are open for representation. Address J. H. Keber, Sales Manager. Please mention this advertisement.

PAYNE Duplex Furnace. Also: Floor Furnace, Modern Console, Gravity Furnace, Spacesaver Unit, Industrial Units, PAYNE "A" Vent and Accessories.

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MORE THAN A QUARTER-CENTURY OF SPECIALIZATION

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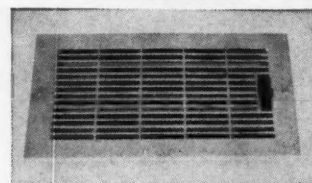
Air "Avidity"

(Continued from page 53)

tive humidity means nothing until we also note the co-incidental temperature and translate it into terms of vapor content. For instance, referring to the three columns at the right of the chart, assume a day starting at 60° and 58.2% saturation. Later the temperature advances to 70° and the relative humidity drops to 40.7%. Still later the temperature rises to 80° and the relative humidity drops to 28.9%. During all the changes of this example the moisture contents remained at 40 grains per pound. In other words, there was no real change in humidity. The example illustrates how a very misleading conclusion can be drawn from a weather report when only the relative humidity, which is not a direct measurement of humidity, is taken into account. It also illustrates why this chart, unlike other similar charts, is based on moisture content instead of relative humidity per cents.

The natural humidity curve of the chart is based on average water vapor contents. These

NEW NEW



A NEW REGISTER WITH NEW FEATURES.

BETTER PERFORMANCE AT LOW LIST PRICE.

Style No. 1190

DETAILS OF "THIN MAN" SHUTTER
Depth Closed 1/4" at top and bottom, 1 1/4" at side of Handle.
Depth Opened 1 1/4" at top and bottom, 1" at side of Handle.

DETAILS OF REGISTER FACE
Mesh size 9/32 x 1 1/2/78-1/4" bars No. 16 Gauge Steel.
Edge turned back, equipped with rubber gaskets.

ECONOMY

Note new low List Price.

New Swivel Socket Lug permits omission of Frames. (Patent Pending).

PERFORMANCE

From closed position the air stream may be graduated over a radius of 135°, that is, directed down, straight or up. Also note the STOP Points.

THE FACE

The Face is removable, permitting easy and secure anchorage of shutter for streak-proof installation, also for painting wall or re-decorating. Sponge rubber gaskets are supplied.

THE SHUTTER

The Shutter is shallow Multiple Valve type, eliminating the objectionable single blade or flap. It has positive cam leverage operation and is strongly built.

BRASS BEARINGS

Moving parts rotate on Brass bearings to minimize rust and clogging.

THE SWIVEL SOCKET LUG (Patent Pending)

By use of this new device Metal Frames can be omitted. Wood Screws are furnished for anchoring shutter to stud or buck. Parker Screws are also furnished for anchorage to duct or frame if preferred. The new Swivel Socket Lug permits anchoring-screws to set at an angle.

STOP POINTS

For equalization and control of the heating system the shutter may be set, if desired, to stop at four points as follows: First Stop curtails air flow for use on short runs. Second Stop gives downward deflection. Third Stop gives straight throw, fourth stop upward throw.

The Stop, when used by the installer, is out of mesh and is adjustable only with a No. 1 Phillips Head Screwdriver—therefore it cannot easily be tampered with.

When shipped, stop will be set in No. 4 position permitting complete 135° swing of shutter. An envelope will accompany each Register containing 2-1 1/2" No. 8 Flathead

Wood Screws for anchoring shutter to stud or buck, and 2-3/4" No. 10 Parker Screws Type A for anchorage to duct or frame if preferred.

REGISTER & GRILLE MFG. COMPANY, INC.
70 Berry Street, Brooklyn, N. Y.

change very little at temperatures below freezing but are subject to changes which increase, in grains per pound, as weather temperatures become higher. The natural humidity curve is the base line from which humidity increase is built up.

Summary

To sum up the principle facts about air humidity which this series of articles has taught:—A clear understanding of air humidity is impossible until we discard the term relative humidity as a direct measurement of humidity. There are only two direct measurements of air humidity, namely: the water vapor content of air and the water vapor deficit or avidity of air. The last named measurement, which has been almost totally disregarded, is the humidity measurement of paramount importance in humidification. Every humidity indicating instrument should be accompanied with a chart to interpret temperature and relative humidity into moisture avidity. Without this, humidity indicating instruments are misleading and practically worthless to the average home owner because they do not tell him the facts he really wants to know, namely the avidity of the air in which he lives for moisture.

Trouble-free Pillow Blocks by *Randall*

Randall self-aligning and self-lubricating Pillow Blocks end bearing failure, give long, quiet, low-cost, continuously satisfactory service in the field. That's why more manufacturers of air-handling equipment are standardizing on Randalls, the bearing used on more air-handling units than any other. Write for catalog today.

One-Piece Steel
Housing Pillow Block



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IS THE WATER COLD IN YOUR TOWN?

COLD OR WARM
YOU CAN MAKE IT PAY
A COOL PROFIT
IN HOT WEATHER WITH ...

Kooler-aire

THERE are two types of Kooler-aire Cooling Systems using water as the cooling agent. One cools by direct expansion cold water coils. The other cools by water evaporation through the USAirCo patented Gyra Spray.

Where water of 60° or colder is available, Cold Water Coil Kooler-Aire provides the practical answer. Where cold water is not available, Gyra Spray Evaporative Kooler-aire meets the demands of stores, offices and homes for business-building, comfort-providing cooling.

Both types of Kooler-aire are *all-in-one-package* systems—complete, compact, attractively designed, easy to install. Both are made in capacities to fit the cooling needs—and budgets—of any business—any home. Because neither requires mechanical refrigeration, first cost and operating cost are extremely low.

Whatever the temperature of the water—it's the temperature of the air—the hot, dry summer air—that makes Kooler-aire sales so easy and so profitable. There are scores of "hot prospects" in your town ready to buy comfort cooling right now. You can get your



share of this profitable business with USAirCo's engineering, sales and advertising help. But don't delay longer—the season is here now—send the coupon at once!

UNITED STATES AIR CONDITIONING CORPORATION

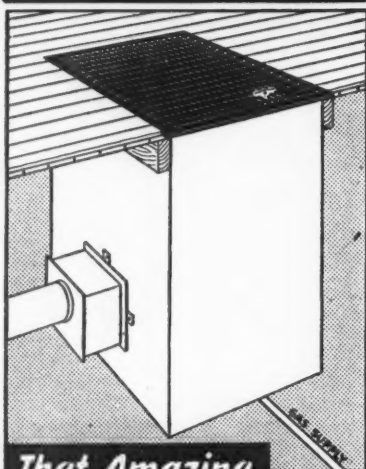
Northwestern Terminal, Minneapolis, Minnesota
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Gas and Oil Burners in the world
manufactures a - - - - -

FLOOR FURNACE



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JOHN ZINK
FLOOR FURNACE



As you would expect this
Furnace features a larger,
improved combustion
chamber and a One-port
Non-plugging Gas Burner.

John Zink Low Pressure Burners

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342 Madison Ave.
New York City

Installation of Attic Fans

(Continued from page 61)

In many sections of the country it is essential
that exhaust openings be screened to prevent mos-
quitoes and flies from entering the house. Where

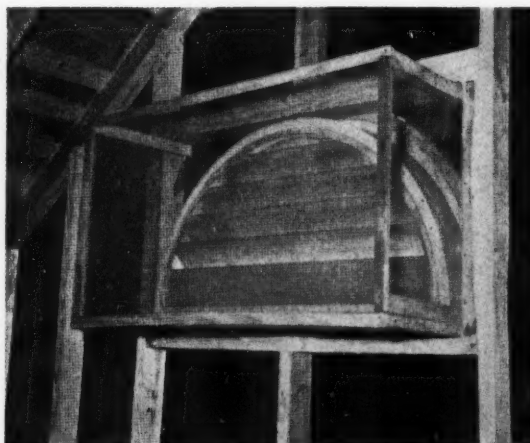


Fig. 37—Inside screening around a gable louvre can
be supported as shown if the screen must be inside
the attic.

this is necessary, the screened area should be at
least double that of the exhaust opening so that
resistance to air flow will be reduced to a mini-
mum. This increased area is obtained by framing

FLANGED and DISHED FURNACE HEADS

Commercial flanged and dished heads have been
furnished to the industry for years. These heads
are die formed, have smooth flanges, and uniform
diameters, thus a close smooth fit against the
body of the furnace is obtained, which prevents
escape of gas.



Commercial heads are made in standard outside
diameters of 22"—24"—26"—28" with straight
flanges, having no outward flare, weld or riveting
flange.

THE COMMERCIAL SHEARING & STAMPING CO.
YOUNGSTOWN, OHIO

out from the exhaust opening into the attic as shown in Fig. 37. Even these screens gradually clog up with lint and dust, and they should be inspected and cleaned once a season or oftener, if necessary.

Dust Collecting Systems in School Shop

(Continued from page 71)

collector through a top outlet and screened hood while dust and shavings empty into a storage bin inside the pattern shop as shown in the plan. The storage bin was fabricated by Reece of 20-gauge galvanized iron with rubber gasketed doors as shown in a detail. The bottom of the hopper is an 8-inch pipe with blast gate for emptying.

Since the building was occupied before the collecting system was installed, the Reece contract included cutting a hole through the precast concrete slab for the pipe from collector to storage bin and for the two lines from exhausters to collector. These pipes were flashed and water-proofed as shown in the detail of the exhausters. Also included in the Reece contract, but sub-let, was the reconstruction of the roof structural framing to support the collector above and the exhausters below.

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Industrial Perforations include all sizes of round, oblong, and many special shaped perforations, for Screening, Grading, Draining and Guarding purposes. Our line is very complete.

Ornamental Perforations are used in Architectural Grilles, Radiator Enclosures, Metal Furniture, Cabinets, Stoves, etc. In addition to the standard shapes we have many exclusive and attractive designs suitable for different uses.

H&K workmanship is unsurpassed.
Write for prices and other information.

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for that
Mercoïd tip-
THAT'S JUST THE TYPE OF
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Mercoïd Controls have done such a good job for so many exacting users of controls, that they do not hesitate to pass on the good word.

The nation's problem of speeding up defense measures is a task for American industry. The responsibilities are many. Safety requirements involving automatic control of temperature, pressure, low water, liquid level or electrically operated mechanism, are important problems in themselves which need critical attention.

Proper heating is also a vital problem for industry. Mercoïd Controls are particularly adaptable to all automatic heating and unit heater requirements.

Mercoïd Controls are built to give lasting and trouble-free service, and that's good news when time is at a premium. Bear in mind that all Mercoïd Controls are equipped with dust-proof and corrosion-proof hermetically sealed mercury switches. This assures added protection and long life.

Here are a few highly recommended items:



Mercoïd Sensatherm

The thermostat that assures even room temperature control under all kinds of weather conditions. Neat in appearance.



Mercoïd Fan and Limit Control

Protects furnace from overheating and operates the fan only when furnace has heat to deliver.



Mercoïd JMI Safety and Ignition Control

Offers positive protection against oil burner flame or ignition failure. The trade's most popular control.

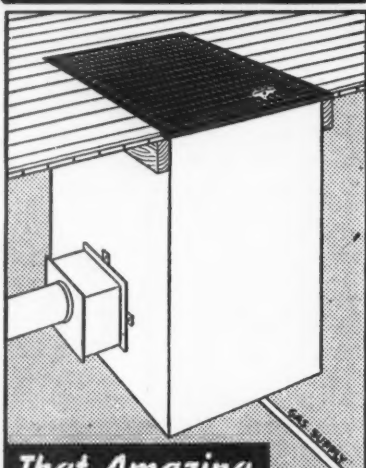
See catalog for detailed information on the complete line.
A copy will be sent upon request.

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As you would expect this
Furnace features a larger,
improved combustion
chamber and a One-port
Non-plugging Gas Burner.

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Tulsa, Okla.

342 Madison Ave.
New York City

Installation of Attic Fans

(Continued from page 61)

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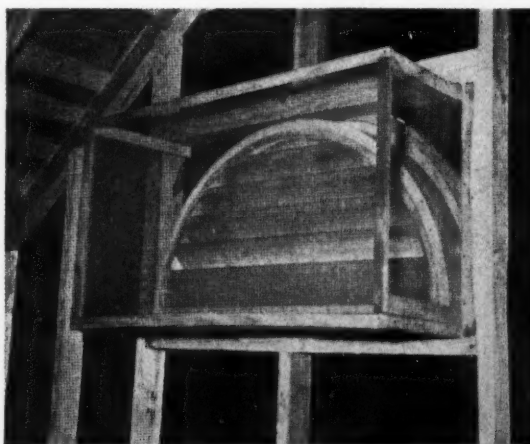


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Commercial heads are made in standard outside
diameters of 22"—24"—26"—28" with straight
flanges, having no outward flare, weld or riveting
flange.

THE COMMERCIAL SHEARING & STAMPING CO.
YOUNGSTOWN, OHIO

out from the exhaust opening into the attic as shown in Fig. 37. Even these screens gradually clog up with lint and dust, and they should be inspected and cleaned once a season or oftener, if necessary.

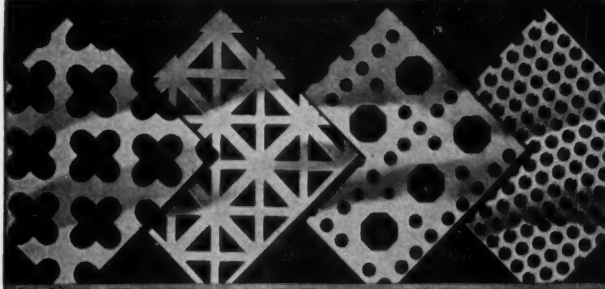
Dust Collecting Systems in School Shop

(Continued from page 71)

collector through a top outlet and screened hood while dust and shavings empty into a storage bin inside the pattern shop as shown in the plan. The storage bin was fabricated by Reece of 20-gauge galvanized iron with rubber gasketed doors as shown in a detail. The bottom of the hopper is an 8-inch pipe with blast gate for emptying.

Since the building was occupied before the collecting system was installed, the Reece contract included cutting a hole through the precast concrete slab for the pipe from collector to storage bin and for the two lines from exhausters to collector. These pipes were flashed and water-proofed as shown in the detail of the exhausters. Also included in the Reece contract, but sub-let, was the reconstruction of the roof structural framing to support the collector above and the exhausters below.

PERFORATED METALS
Industrial and Ornamental



ANY METAL • ANY PERFORATION

Industrial Perforations include all sizes of round, oblong, and many special shaped perforations, for Screening, Grading, Draining and Guarding purposes. Our line is very complete.

Ornamental Perforations are used in Architectural Grilles, Radiator Enclosures, Metal Furniture, Cabinets, Stoves, etc. In addition to the standard shapes we have many exclusive and attractive designs suitable for different uses.

H&K workmanship is unsurpassed.
Write for prices and other information.

The Harrington & King
PERFORATING CO.

5649 Fillmore St., Chicago, Ill.

New York Office, 114 Liberty St.



THANKS!
for that
Mercoïd tip-
**THAT'S JUST THE TYPE OF
CONTROLS I'M LOOKING FOR**

Mercoïd Controls have done such a good job for so many exacting users of controls, that they do not hesitate to pass on the good word.

The nation's problem of speeding up defense measures is a task for American industry. The responsibilities are many. Safety requirements involving automatic control of temperature, pressure, low water, liquid level or electrically operated mechanism, are important problems in themselves which need critical attention.

Proper heating is also a vital problem for industry. Mercoïd Controls are particularly adaptable to all automatic heating and unit heater requirements.

Mercoïd Controls are built to give lasting and trouble-free service, and that's good news when time is at a premium. Bear in mind that all Mercoïd Controls are equipped with dust-proof and corrosion-proof hermetically sealed mercury switches. This assures added protection and long life.

Here are a few highly recommended items:



Mercoïd Sensatherm
The thermostat that assures even room temperature control under all kinds of weather conditions. Neat in appearance.



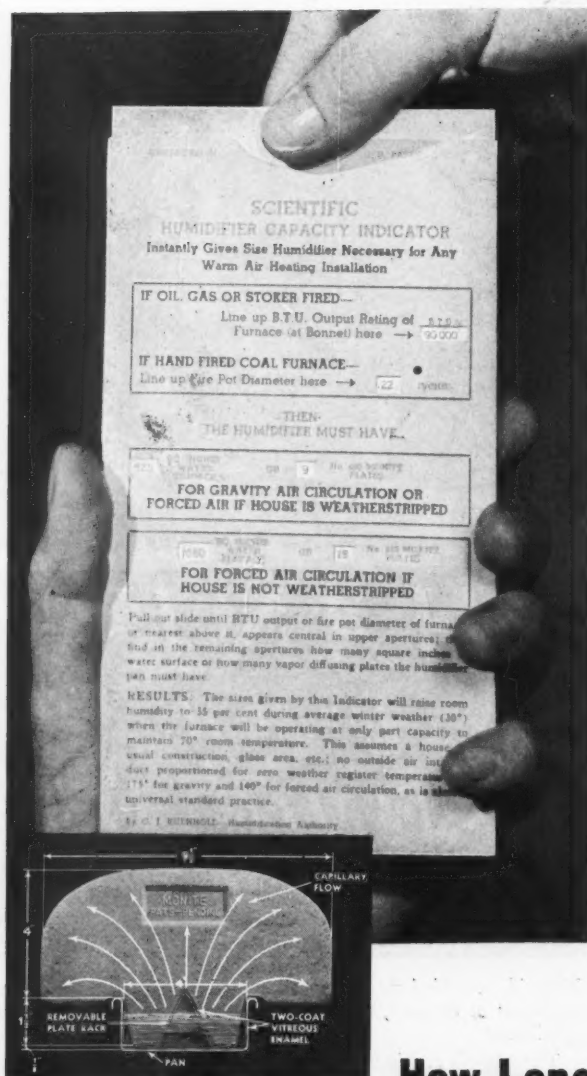
Mercoïd Fan and Limit Control
Protects furnace from overheating and operates the fan only when furnace has heat to deliver.



Mercoïd IMI Safety and Ignition Control
Offers positive protection against oil burner flame or ignition failure. The trade's most popular control.

See catalog for detailed information on the complete line.
A copy will be sent upon request.

THE MERCOÏD CORPORATION • 4207 BELMONT AVE. • CHICAGO, ILL.



How Long Does It Take You to Estimate Humidification Requirements?

The answer is TOO LONG. And when you get through it's still an estimate and you can't quite forget the times that you guess wrong. You are not alone in this. The entire industry has done it for years.

But now there IS a way to quickly and accurately estimate any humidification job. Just look at the picture of the Monmouth Capacity Indicator. It does all the work for you and the answer is always right. Let us send you one FREE.

And having diagnosed the situation you can cure it with Monite Vapor Diffusing Plates plus a complete price range of controls. Write today for your FREE Capacity Indicator and complete data on Monmouth Humidification.

MONMOUTH PRODUCTS CO.
1933 East 61st St. Cleveland, Ohio

MONMOUTH
The Greatest Name in Humidification

Kruckman— Priorities

(Continued from page 44)

is your certified privilege of getting something before some one else gets it. You get it first because you are making something the Army, the Navy, Great Britain or other Government agencies need urgently. The Government has arranged you shall have a supply of the material out of which you make the thing before somebody else is allowed to get it. And why do you get it first? Because there is not enough to go around to make the things the Army, Navy, Britain, or other Government agencies want, and to supply others in the quantity they need, so the Government arranges this way of rationing which it calls priority. It is of course rationing—rationing the stuff of which we have not enough to go around for all purposes.

This is how they do the rationing: the Navy, the Army, the British, the Federal Power Commission, Interstate Commerce Commission, U. S. Maritime Commission, National Advisory Council for Aeronautics, Bituminous Coal Commission, Coast and Geodetic Survey, and the Coast Guard, have first call because they use certain things to defend us. So, as an evidence of the fact that you are entitled to the material—whatever it is—the Government gives you a certificate and that certificate bears symbols which indicate how much more urgent it is that you should have the material than some other person.

If you have a certificate marked AA it shows you are doing something of utmost importance, more important than any other group. AA indicates the most urgent need and is issued only in an extraordinary emergency by the Director of Priorities himself. A-1 comes next and is important. Naturally A-2 means the man who holds the certificate is to be supplied after the man who holds a certificate with A-1; those who hold the certificate with A-3 come after those who hold A-2. And so on, down to

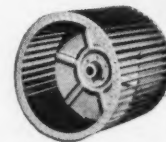
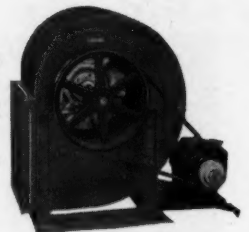
YOUR BLOWER REQUIREMENTS

available at

Schwitzer-Cummins Company

• BLOWERS FOR EVERY PURPOSE

HY-DUTY Blowers, 9 3/4" to 25".
Top and Bottom Horizontal, and Top
and Bottom Vertical Discharge.
Top and Bottom Motor Mounting.
Dual Units also available.



• CENTER DISC WHEEL

Double Inlet, Double Width.
Reinforced Center Disc.
Designed for Modern Air Conditioning and
Heating Applications.
Sizes, 4 1/2" to 50".

• SINGLE INLET WHEELS

For Oil Burner, Stoker, and Air Conditioning
Applications.
Sizes, 4 1/2" to 50".
Variety of Blade Lengths for each diameter.



• ENGINEERING DATA

Write for Catalogues showing complete Performance Data.
Experienced Engineering Department available to help solve your
Air Handling Problems.

BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
125 FAN STREET INDIANAPOLIS, U. S. A.

A-10. All certificates for military priorities bear the letter A.

The series of letters and figures are called the rating. The rating indicates the relative importance of the thing you are making, and tells the person who supplies the rationed material whether you come before or after some other person who needs some of the same. If there is any conflict between holders of certificates with identical ratings, as a general principle, right now, the Navy comes first because apparently the Navy may be called upon for service before any other service. Thereafter the conflict would be settled this way: the identical certificate—with the same rating—held by the person who must make the earliest delivery will be given preference. If holders of identical certificates must deliver on the same date, the preference will go to the holder of the order with the earliest date. And if even these dates are the same, the nearest military inspector connected with the service which ordered the job should be asked to make a ruling. If there is no inspector, find the nearest contracting officer; and if he cannot or will not rule, take the problem to the Joint Army-Navy Priority Board in Washington, composed of three military men. Whatever they decide is ultimate, the final word.

B, C, D Do Everything Not Military

Non-military certificates bear the letters B, C, and D. These certificates are issued for materials supplied to those who are doing non-military jobs, jobs that may have a relation to military needs, to defense, or to things that are important in serving the national welfare. The preference is to those who are working for the greatest good of the greatest number. Jobs that are useful or necessary to the most people in the widest application are the jobs that have the earliest right to supplies. Earliest preferences, for instance, would be public health, municipal and State public works, firefighting, public buildings and similar obvious public necessities.

B-1 is issued to those who need materials for repairs,

Premier FURNACE CLEANER

BUILDS BUSINESS TWO WAYS



There's a nice profit in the cleaning jobs you'll get with Premier's powerful one-man furnace cleaner. But the leads you'll get on immediate repair work and new sales mean even bigger business. Write today for literature and information on business - promoting postcards that develop prospects for you!

NEW IMPROVED MODELS Completely Equipped

5 1/2 H.P. . . . \$69.50
1 H.P. . . . \$89.50

Complete Chimney Cleaning Equipment Only \$9.00.

ELECTRIC VACUUM CLEANER CO., INC.
 1730 Ivanhoe Rd. • Cleveland, O.

CAN A FURNACE HAVE A BRAIN?

You
Will
Wonder
When
You
Install

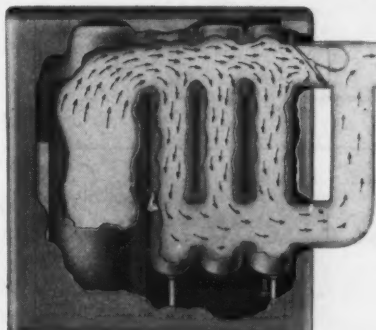


PATENTED AUTOMATIC DAMPER
 15 Years Service Without Replacement
 Is An Average Record

THE LEADER KOOLSTACK

and see stack temperatures positively controlled and heating surfaces automatically adjusted to the fuel consumed.

THE ARROWS TELL THE STORY



Note hot gases contacting heating surfaces.
 That's why the stack is cool.

IT PUTS
NEW
SALES
BLOOD
IN THE
HEATING
BUSINESS

The Koolstack line of warm air furnaces is complete. Furnished in square cabinet or round cased types. The Koolstack gives the heating trade

"SOMETHING TO SELL"

Because no other furnace can have its patented features.

**ENGINEERED FOR
OIL BURNER
STOKERS
HAND FIRED**

You Can Pull Your Business Out of the Competitive Class with

THE KOOLSTACK

Write Today.



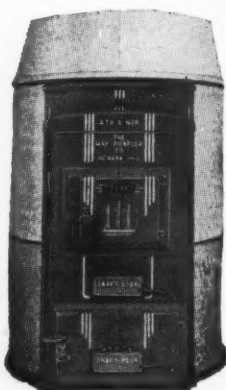
Round Cased for New or Replacement Jobs

LEADER IRON WORKS, INC.
 2841 N. JASPER ST. DECATUR, ILLINOIS

50 YEARS OF LEADERSHIP *The Time-Tested* ATH - A - NOR

Furnaces, like any other piece of merchandise, are only as good as the people who make them. The May-Fiebeger Company has been making the ATH-A-NOR Furnace illustrated for over fifty years, and the fact that it will perform with unusual efficiency and economy is backed up by hundreds of satisfactory installations.

If you've been looking for a fast-moving, top performing gravity furnace to round out your line, investigate the ATH-A-NOR now! A postcard request will bring literature.



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- ECONOMY
- EFFICIENCY

*... write today
for further information!*

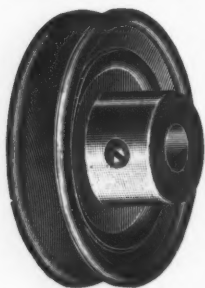
MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS

MAY-FIEBEGER COMPANY
NEWARK OHIO

"They help sell our product"

... that's what users say about

MAUREY V-PULLEYS



Steel



Cast Iron
Variable Pitch



Cast Iron

Heating and Air Conditioning Plants, Refrigeration Units, Fans, Blowers, Stokers and similar installations **MUST** have dependable V-Pulleys for F. H. P. Transmission.

Manufacturers of apparatus of this kind have found that Maurey V-Pulleys installed in their units assure unfailing dependability that can be guaranteed against "break-down" caused by pulley failure.

When considering V-Pulley requirements, be sure to compare Maurey V-Pulleys with any other V-Pulleys made, for Design, Workmanship, Appearance and Performance.

Write for Circulars Describing Maurey Steel, Cast Iron, and Variable Pitch Diameter V-Pulleys.

MAUREY MANUFACTURING CORP.

Wabash at 29th Street, Chicago, Illinois

replacements used directly or indirectly in substantial quantities for defense orders; B-2 is issued for essential services and production, particularly for repair and replacement of existing facilities urgently needed for public welfare; B-3 is given to those who need materials for new facilities for essential services and repairs; B-4 is issued to those who need materials for jobs important to public health and public safety; B-5 is used in helping those who need supplies in limited quantities to serve their long-established customers—of at least a year's standing. Those who use substitute materials will not be given ratings of B-8 and over. Priority ratings are given for civilian needs only if every other means have been exhausted. The C ratings cover all civil needs for the general effort in support of defense. D ratings cover all other civil needs.

Limited Blanket Certificate for Long Jobs

Certificates issued go to an individual, meaning an individual in person, or as a firm, or single corporation. They apply to one specific material for one specific job. The manufacturer or fabricator must secure a separate specific certificate for the material he needs in the job upon which he is working. If he is working on a very urgent job and it is obvious he must have a supply of certain materials over a period of time, the Priorities Division will issue a limited blanket rating which will enable the producer to secure what he needs without getting a separate certificate for each order.

In some instances these blanket ratings are issued to a group of industries. Another class of certification is the so-called industry-wide allocation. This rating is issued only to groups of industries who work wholly on defense. As a rule these ratings cover the industries which use materials known as mandatory allocations, which means those things which are needed for defense either wholly or almost entirely. There are such allocations now in the rationing of aluminum, magnesium, nickel, nickel-bearing steel, ferro-tungsten, machine tools, neoprene, and a

*SAY, JIM, WHAT WILL WE
DO ABOUT ALL THESE CALL-
BACKS WE'RE GETTING
ON FURNACE JOBS?*

*I'D CHANGE TO
THARCO FURNACE
CEMENT, BOSS, THAT
WILL STOP 'EM!*

Leading furnace manufacturers and repair men have found Tharco Asbestos Furnace Cement "tops" in every way. Why not try it on your next job? See your jobber.

THE ARMSTRONG COMPANY
DETROIT DALLAS CHICAGO

monthly pool of certain proportions of zinc. Beginning June 10, such controls are placed on antimony, cadmium, chromium, cobalt, copper, all ferrous alloys, iron and steel (including rolled, drawn, forgings, castings, pig iron), lead, manganese or spiegeleisen, molybdenum, brass, bronze, all non-ferrous alloys, tin, and secondary or scrap metals.

All foundries and industries using these metals are supposed to receive questionnaires to elicit the exact state of their current inventories. If you have too much you will be stopped from getting further supplies and you will be expected to reduce your stock to "reasonable" levels. OPM is out to arrest excessive inventories. The unit that supplies the metal and the customer who uses it must file sworn statements of compliance. The obligation rests upon producers, primary and secondary smelters, re-smelters, brokers, warehouses, wholesale distributors, processors, fabricators, any one who uses the metal in its manufactured form or who manufactures and sells it. The general idea is to keep the metal stock piles on hand below three months reserve. Subcontracts are covered by this order. Incidentally these industry-wide controls on June 10 also cover air conditioning and piping products, various lumber products, and clay and glass products.

Metals Scarcity to Grow

The growing lack of metals is expected to shrink civil production. Some here say many civil industries will be lucky to get 10% or 15% of some of their normal metal needs in Fall. By August 1, many factories and shops working on heating and plumbing equipment, trucks and other similar equipment, including their machine shops, are expected to virtually be forced into complete defense work. They tell you here automobile production will be at least 40% to 50% off.

The Priorities Critical list, which may be regarded as a sort of guide post, includes pig or fabricating aluminum or alloys; pig or fabricated brass; pig or fabricated bronze; steel, brass, aluminum castings of all kinds;

A Real SHOCK ABSORBING PILLOW BLOCK

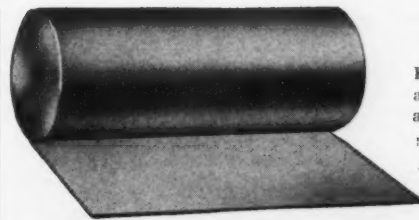


New Type Silent Bearing for Blower Service

Unique engineering encloses bushing, cushion and oil reservoir in pressed steel ball, making compact unit streamlined to present minimum of air restriction. Built-in, oil-proof, synthetic rubber cushion absorbs vibration. Porous bronze bushing, wick-fed from large oil chamber insures lubrication for exceptionally long periods of operation. Positively self-aligning due to ball and socket action of spherical housing and mounting.

Results! Low cost, increased air delivery, utmost durability and freedom from vibration. Quotations submitted on request.

TRIANGLE MFG. CO., 395 Division St., Oshkosh, Wis.



Asbestos Paper and Rollboard

Furnished in 8, 10, 12, 14 and 16 lbs. per 100 sq. ft., also in thicknesses of $\frac{1}{16}$, $\frac{1}{8}$ and $\frac{1}{4}$ ". Rolls 18, 24 and 30" wide containing approximately 50 or 100 lbs. each.

SAL-MO ASBESTOS PAPERS

Your jobber *knows* the quality of all SAL-MO Asbestos Products and can quickly furnish you with the proper materials for insulation of all Warm Air Heating and Air Conditioning installations.

See Your Nearest Jobber and Ask For SAL-MO ASBESTOS MATERIALS.

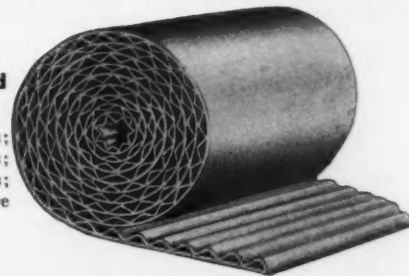
SALL MOUNTAIN COMPANY

176 West Adams Street

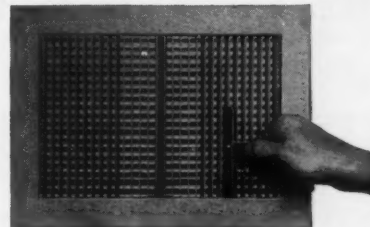
CHICAGO, ILLINOIS

Asbestos Corrugated Aircell Paper

Aircell, $\frac{1}{4}$ " corrugations; Sixcell, $\frac{1}{2}$ " corrugations; Multicell $\frac{3}{8}$ " corrugations; Rolls contain 250 square feet, 36 $\frac{1}{2}$ " wide.



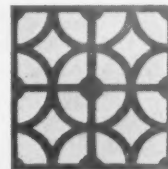
REGISTERS and GRILLES



The appearance and durability of the registers and grilles you install are of prime importance to your customer, because the proper register or grille can do much to enhance the appearance of any installation. When you use Standard Registers and Grilles you have a wide choice of handsome, efficient faces to make your installations really stand out. Illustrated above is the Double Adjustable Grille. Bars on face and in back adjustable in groups, for four way direction of air flow. Back louvers can be adjusted from face.

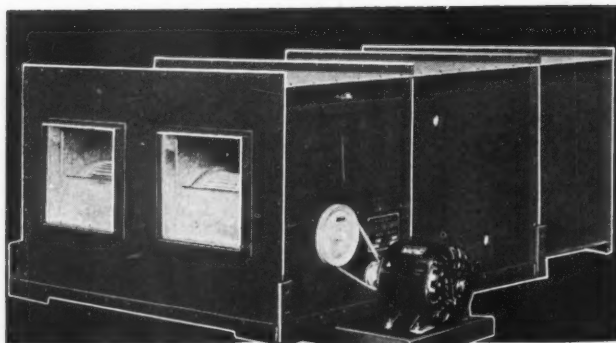


Stamped Ornamental Grilles for Heating and Ventilating Installations.



Write Today for Our Catalog

STANDARD STAMPING & PERFORATING CO.
3137 W. 49th Pl. Chicago, Ill.



CLORAGE

Multitherm Units

Designed to control temperature and humidity within close limits. Can be made completely automatic in operation, regulated by room thermostat and humidistat.

✓ Cooling
✓ Heating
✓ Complete Conditioning

Finest type of equipment available for small summer cooling, winter heating or complete year-round air-conditioning jobs. Widely used in factories, offices, stores, etc. Highly efficient; remarkably compact; easily installed in any idle space.

Write for Bulletin 107 describing various arrangements and giving capacity ratings.



CLORAGE FAN COMPANY
872 PORTER STREET • KALAMAZOO, MICH.
Sales Engineering Offices in all Principal Cities

Choose your humidifier for *MEASURED* moisture and you'll choose **THERMO-DRIP**

- It automatically accelerates, throttles or shuts off the water feed as the temperature in the furnace rises or drops—never a fixed amount of water in the pan regardless of whether the furnace is hot or cold—never the uncertainty about the amount of vaporization as long as temperature governs the water feed. Sell THERMO-DRIP and cash in on *measured* moisture!

Ask Your Wholesaler or Write Us
for Complete Details



AUTOMATIC HUMIDIFIER CO.
18th and Main Street CEDAR FALLS, IOWA

chromium alloy steel; heating equipment; portable and refrigerator containers; brass, steel, aluminum forgings; jigs and fixtures; all machinery for forging, casting, cutting, grinding, hoisting, melting, welding, refrigerating; pig and prefabricated magnesium and alloys; pig and fabricated nickel; nickel alloy steel; tin; tungsten alloy steel; and other materials and products.

Until the Priority Division imposes regulations, the supplier of materials or the producer is free to accept orders without certificates and ratings. If you have difficulties about materials or you have difficulties in arranging ratings and you confront trouble in keeping your shop or factory going, consult the Defense Contract Service man at the nearest Federal Reserve Bank or branch.

1940 Census Of Housing

(Continued from page 43)

warm air; pipeless warm air; heating stove, other or none. The statistics on fuel will show: with central heat whether coal, coke, wood, gas, oil, other; no central heat: the same. The statistics will be further analyzed to show equipment and fuel for: urban for each state; rural, non-farm for each state; rural-farm for each state; county total for each of 3,100 counties; city total for each of 1,077 communities over 10,000 population; totals for each of 140 metropolitan areas.

If your sales analyses can use such data make application to Census of Housing, Bureau of Census, Washington, D. C.



The PREMIER Line Keeps a Dealer Busy Both Summer and Winter . . .

Confidentially, if your summer business stinks, you need PREMIER — the one line that's really *complete*. You can sell this line in all seasons, and *we'll help you*, with our great program of advertising, selling, engineering, and financing cooperation. Exclusive franchise.

PREMIER FURNACE CO.
Dowagiac, Mich.



PREMIER • Warm Air Heating
• Air Conditioning
• Automatic Fuel Burning
• Cooling Equipment
The Year Round Line

Copper Roofs Can't Be Waterproofed With Compound

(Continued from page 79)

reveal how the felt paper is badly sagging, bulging, and the surface application sealing.

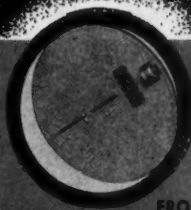
The picture in which the key is slipped under loose felt graphically shows where the water enters. The water further opens and frees the paper particularly in winter when it freezes and expands.

Another trick in demonstrating the marvelous qualities of the "cure-all" products is the sample which salesman hands the prospect. A quantity of the compound is smeared over a piece of light metal or even burlap. The salesman attempts to prove the unparalleled pliancy of the dope by bending and twisting the medium on which it has been placed.

Amplly saturated with liquids and oils the material bends well and doesn't crack. It's new. It's fresh. It's ductile.

But should he show you a similar sample that has been exposed for a time to weather where the sun has had an opportunity to evaporate and draw out the moisture elements you would see a product that is dried, cracked and crumbled. The exposed product is worthless as a permanent corrective for leaking copper roofs.

Draft-O-Stat has STAINLESS STEEL BEARINGS



FRONT VIEW



BACK VIEW



THE HOTSTREAM HEATER COMPANY
8007 GRAND AVENUE • CLEVELAND, OHIO

guaranteeing lifetime satisfactory service

● An automatic draft control is only as good as its bearings. If the bearings wear or "freeze," the unit is worthless. Actual service tests showed that only one bearing metal withstood wear, corrosion and "freezing." That's why Draft-O-Stat selected this metal . . . Stainless Steel, for its bearings.

Other Draft-O-Stat Features

Quality materials, better design and greater sensitivity add to Draft-O-Stat efficiency. Only Draft-O-Stat gives you the 34° bearing angle established by research as the correct angle for peak efficiency operations.

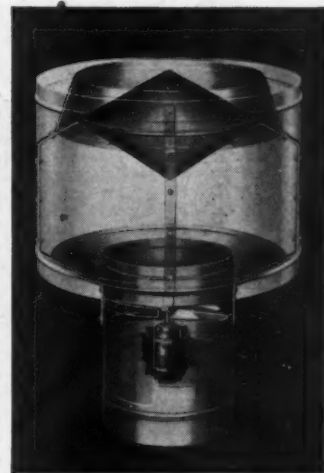
Learn the real truth about Draft Control. Get the 48 page Hotstream Draft-O-Stat Manual covering domestic, commercial and industrial installations.

REMEMBER—
There is only
ONE
DRAFT-O-STAT

"Stream-Flo Fan"

An ALCO FAN VENTILATOR

High velocity and concentration of air flow, with effective free area, make this combined fan and "Stream-Flo" Alco Ventilator a most powerful unit. Dependably rain-proof, of advanced design throughout, it insures highly efficient trouble-free operation for big capacity. Stack restriction is kept at minimum, for good gravity operation when fan is not operating.



Ample range of sizes. Please write for capacity tables and fully descriptive catalog.

From our wide line of ventilating equipment, we can supply you the proper units for any job you may be asked to handle. Let us assist you through our engineering department.

The ALLEN Corporation

Ventilation Specialists

9752 ERWIN AVE., DETROIT, MICHIGAN

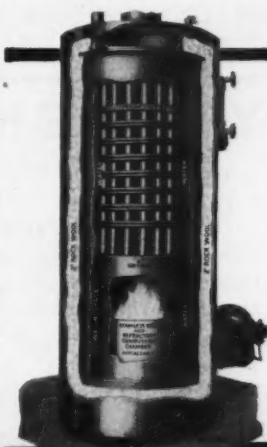
ALDRICH ELIMINATES FUEL UNITS

NO MORE CLOGGED NOZZLES!

● Aldrich leads again! Fuel units are eliminated—and with them most of the expensive field service work that cuts your profit. Aldrich uses a simple pump and valve arrangement—valve in the nozzle where it should be. It's a better fuel system. Makes possible our exclusive "liquid cooled" nozzle—eliminates carbon formation in nozzles. Get complete facts!



Aldrich fuel pump seldom needs servicing—but if it ever does have to be replaced it costs only about half as much.



HEAT-PAK BOILER...

Opens the profitable home heating market to you!

● Standardization and volume production have produced this long-lived, remarkably efficient, high-quality HEAT-PAK Boiler for steam or hot water. You can sell it profitably at a price that's competitive with warm air heating! Comes complete with burner, combustion chamber and controls. Tankless type coil for year 'round domestic hot water. Get all the facts on the Aldrich complete line of burners and oil-fired boilers and water heaters NOW.

ALDRICH COMPANY • WYOMING, ILL.

Repair parts

**FOR ALL
HEATING UNITS**



A. G. BRAUER SUPPLY CO.
*Distributors of All Heating and
Air Conditioning Equipment*
2100 Washington Ave. St. Louis, Mo.

PORTABLE SHEARS

ALL-ALLOY



ALL-ALLOY No. 2 cuts up to $\frac{1}{4}$ " steel plate.
ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.
Special blades may be had for shearing stainless steel.

FULLY GUARANTEED

BREMIL MFG. CO. Erie, Pa.

GET INTO THE BASEMENT and SELL MORE FURNACES and REPAIRS

with Breuer's Ball Bearing

TORNADO

FURNACE & BOILER
VACUUM CLEANERS
5 NEW MODELS
NEW LOW PRICES



Other dealers are getting more business with the TORNADO—you can, too. Our FREE SALES PLAN tells you how. Write for it TODAY.

BREUER ELECTRIC MFG. CO.
5828 N. Ravenswood Ave. Chicago, Illinois

*Free Trial
Easy Terms*

EASY EDGER



Turns $7/32$ " Right Angle Flange on straight, curved or irregular pieces—20 gauge or lighter—in one pass through the machine.

Over 2000 in daily use.

\$33⁵⁰ ... less stand, F.O.B. Chicago. See Your Dealer or write . . .

THE LOCKFORMER CO.
4615 Arthington St. Chicago, Ill.

SELF GAUGING

Fire Prevention Measures in Ventilating

(Continued from page 66)

starting. Several filters are now listed and it will be only a matter of time until all the better filters will bear an Underwriters label just as our radios, electrical apparatus, etc.

Ordinarily one does not connect cooling with fire. However, most cooling systems also use ducts to convey the cooled and conditioned air and refrigeration is employed in many cases as a means of cooling. Some refrigerants are inflammable as well as toxic. The Underwriters Laboratory Inc. have listed and classified refrigerants according to their flammable characteristics or toxicity and those which are dangerous in these respects should not be placed in air ducts or air circulating passages. There is also an American Standard Safety Code for Mechanical Refrigeration which covers worthwhile regulations.

Probably the simplest device that may be applied to a system is the fusible link in connection with weights. These may be located in the fan room to shut down motor switches, in ducts to shut off dampers, in sprinkling systems to turn on water, to close fire doors, and to close fresh-air intakes.

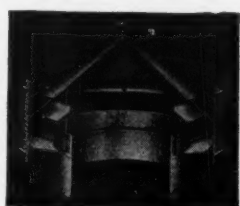
Limit Control Necessary for Safety

Another control vitally necessary to safe operation of automatically forced systems is a limit control which will operate to shut down the fuel supply when and if the temperature rises to a dangerous point. These are especially important in residential automatically controlled heating systems no matter what fuel is used. As an added factor the controls should also be of a type that will shut down the fuel supply in event of current failure. Many times hard fuel furnaces, and sawdust burners are controlled by automatic draft controls. Some have been sold that do not close the drafts in event of current failure. This can be dangerous if the current failure is long enough to cause an overheated furnace. Naturally the shut down feature is taken care of in oil burners, stokers and gas burners by the very nature of the operation of the control system in that the motor stops or the solenoid valve closes when the current goes off.

Maximum temperature for limit control settings should be 250° and it is recommended that the maximum setting to start the fan should not be higher than 175° . Well designed systems now being installed in residences can be operated on fan settings as low as 125° with limit control settings of 175° to 200° . With such settings fire hazards are materially reduced. Other controls applicable to oil and gas burners are commonly

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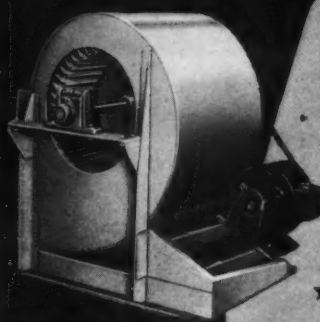
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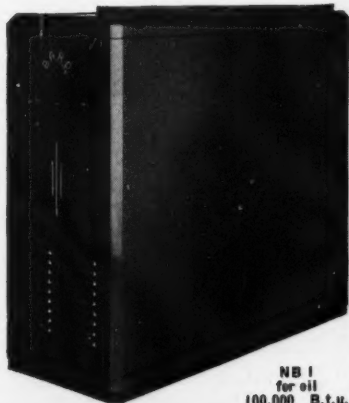
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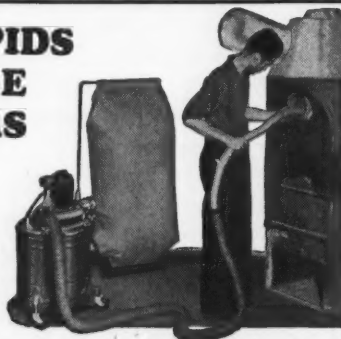
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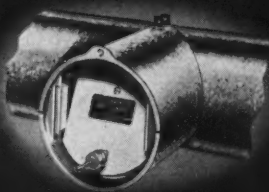


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called safety combustion controls and are included in all listed fuel burning equipment.

Since a large number of small cities and towns do not have codes regulating the installation of winter air conditioning systems in homes it seems fitting to include suggestions as to regulations which have been found to be practical. Therefore, the following rules in rather a brief manner cover the essential precautions necessary to eliminate fire hazards.

1. Locate the unit with due regard for proper clearance between hot surfaces and combustible materials. This applies particularly to the smoke breeching and fronts rather than sides of the furnace or boiler. A minimum of twelve inches from unprotected woodwork should be the distance regulation for smoke breeching. In all cases non-combustible bases or foundations should be used.

2. No automatically controlled firing unit should be installed without a limit control, preferably with an extreme maximum setting of 250° Fahr. for forced air installations and 300° for gravity systems. If a higher limit control setting is necessary to obtain sufficient heat something is wrong with the installation.

3. All ducts and pipes for conveying heated air should be of non-combustible material. Any insulation used on ducts or any sound proofing should be also of non-combustible material.

4. Filters should be of non-combustible material or of a type treated with some fire-resistive substance to render them virtually fire proof. This is a very important factor in those units which have large heating surfaces in the same compartment with the filters.

5. All stacks and register boxes through partitions should be covered with at least one layer of 10lb asbestos paper.

6. Fresh-air intakes should be screened.

7. Proper hand or automatic draft and damper controls should be installed.

8. Where lined joist spaces are used for return air as well as boxes with metal top and bottom and wood sides it is important that sufficient access openings be left for cleaning.

9. All electrical work to units should be installed according to recognized code methods.

10. Undersized equipment and ducts are a definite invitation to fire and should not be tolerated.

To all which has been said so far there is one recommendation that will do more to eliminate fire hazards than any one thing. That is the adoption of a strict code with adequate and qualified inspection by every city and town. Such a code should have rules for determining equipment size as well as all the other regulations generally a part of codes.

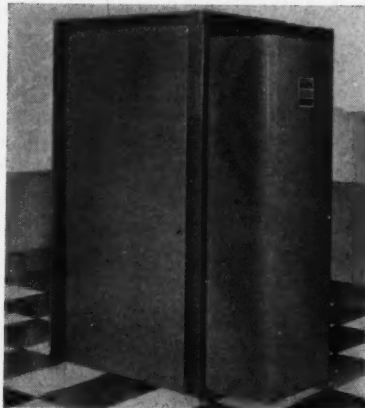
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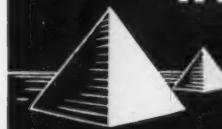
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Imbeds in the wood as
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All Sizes for

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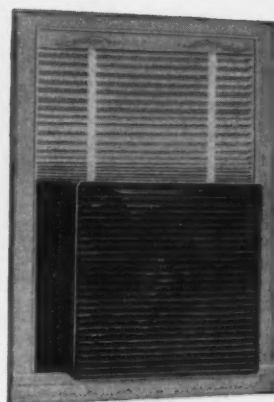
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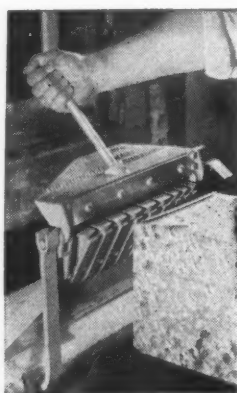
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Pennsylvania's 1941 Convention

(Continued from page 95)

in mind. A clean, attractive appearance does more good, saleswise, than appearing before the customer with face dirty and in dirty overalls. A friendly attitude with a ready smile, has always been one of the requisites of salesmanship and applies just as readily to the furnace dealer as to the bond salesman. Selling yourself, your product and your service are the keys to a successful sale, whether that sale be warm air heating or any other commodity. Perseverance and courage will gain a hearing and oftentimes close the sale.

Mr. Van Alsburg pointed out that the successful warm air heating contractor should be widely known so it may pay to join organizations in order to extend the circle of acquaintanceship. Sales are made from prospects, pointed out Mr. Van Alsburg, and prospects either come into the place of business voluntarily or must be sought by canvassing, advertising, or other forms of salesmanship. The best contact any furnace dealer can have is the old satisfied customer, and the firm seeking to enlarge its activities should make the old customer the No. 1 prospect.

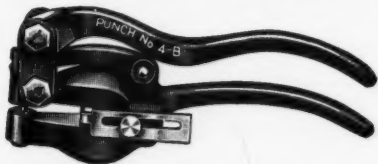
Mr. Van Alsburg declared that contractors' experience showed that a good office girl pays by giving the owner more time for selling; a good office girl can also handle telephone solicitation and telephone calls. Canvassing and job inspection reports filled in as a result of canvassing offer a very fertile field for future sales; a photograph file showing jobs completed and installations in homes of satisfied customers is always of interest to the prospect; a good file of testimonials is always an important sales adjunct; and the ability to present an intelligent sales story without stumbling for words is worth the time and study which it takes to perfect such a sales story.

Economics of the War

Prof. R. E. Slesinger of the University of Pittsburgh, speaking on "Economics," presented an unusually clear presentation of this difficult subject. "Inflation is today a constant worry to a great many people," said Dr. Slesinger and most every one wants to know if there is anything business men can do to prevent inflation and depression and all of the other calamities of bad times." Much study is being given these problems, said the doctor, but whether or not any surety proposals have or will be made remains to be seen. The government today is obtaining its war needs by taking up the slack in industry which has been running 20 per cent shy of normal production for many years. Shortly we may expect to see this slack completely taken up and then the government will have to obtain its war needs by reducing the consumer's goods manufactured and purchased. Dr. Slesinger said most economists predict that this situation has already been reached or will shortly be reached and the consumer then will have to get along with fewer automobiles, radios, refrigerators, and other luxuries.

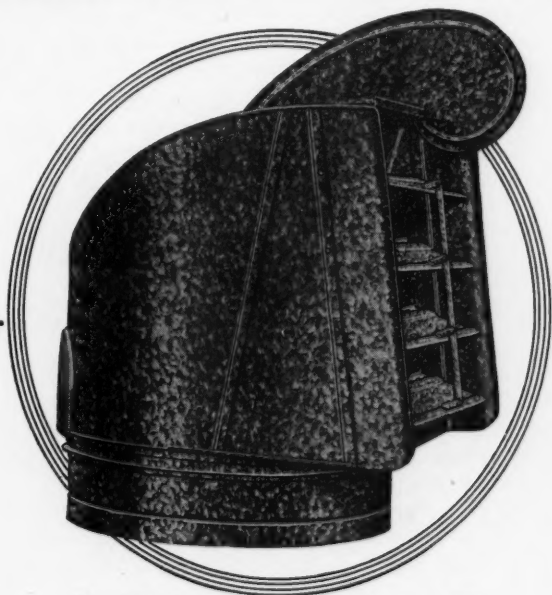
An interesting situation is developing whereunder war production pay rolls are placing more money in the hands of the public and the more money the public has the more surplus and luxury commodities the public can buy. When the time comes that rearmament requires a reduction in consumer goods, then the public will have money but nothing to purchase and

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Signed—XYZ . . . Michigan

Complete information; name, address of writer of above letter furnished on request. Phone, wire or write The Williamson Heater Company.

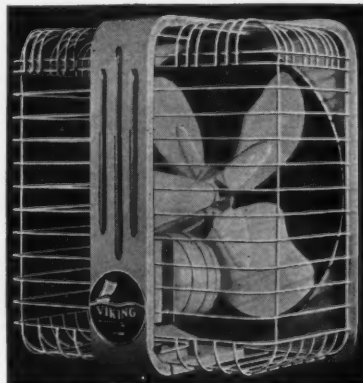
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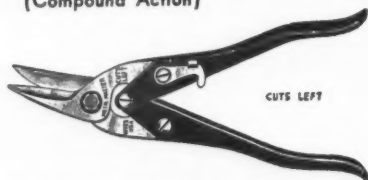
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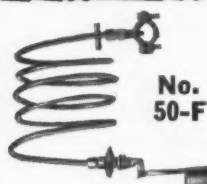
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this can lead to inflation unless the government takes this surplus money from the consumer in the form of war taxes. Economists believe that this taking of surplus income is one way to curb possible inflation because there will be neither commodities to bid for nor money with which to buy and as a result sales of commodities to consumers should reach a constant level short of inflation.

On the subject of national debt, Dr. Slesinger appeared optimistic because he pointed out that a national debt is serious or not serious, not because of the total amount of the national debt, but because of whether or not the public can afford to pay off and carry the interest of this debt. The one billion dollar debt which the nation had in 1789 was, according to the speaker, far heavier than a 100 billion dollar debt can be in 1941. Interesting, also, was the doctor's disclosure that there has been practically no change in income distribution in the last ten years. There is just about the same percentages of income earners with just about the same average annual income in 1939 and 1940 as showed ten years previously. Economists believe, said the speaker, that much of the depression following the last world war was due to the practice of easy credit which permitted purchasing of commodities on time payment far beyond the ability of the purchaser to pay. All government agencies are today considering curbs on any such easy credit inflation, said the speaker.

Time Payment Financing

The subject "Finance" with particular reference to time-payment plans was briefly discussed by R. W. Lipstreu who said that 1941, from the time payment finance company's view point seems likely to be a very busy year for all suppliers of consumer goods. More men will be at work earning larger wages; more people are interested in home building, remodeling and improvement. These factors contribute to an active and profitable year for warm air heating, roofing, and sheet metal contractors.

Pennsylvania Compensation Law

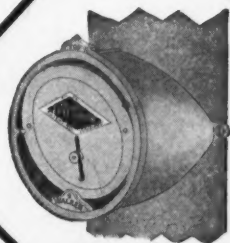
Some aspects of the Pennsylvania compensation law and rates were presented by Mr. Neiber of the State workman's insurance fund, who described how the state compensation act was inaugurated in 1916 and has been self-supporting every year since. The state fund assumes complete responsibility, said the speaker, which no other private policy offers. For 1941 there are three classes of compensation rates for contractors in our industry as follows:—The rate for inside shop sheet metal work is \$1.55 with a \$30 minimum premium; the rate for outside sheet metal work is \$3.20 with a \$38 minimum premium; the rate for roofing is \$8.30 with a \$45 minimum premium. The speaker did not divulge whether or not these rates are under consideration for changes downward or upward, but did urge contractors to preach safety to all young or all new employees entering the heating and sheet metal field.

The Barrett Company offered for lighter entertainment a moving picture showing the application of a very heavy built-up roof on the power house at Boulder Dam. The overall thickness of this roof is 5 feet intended to protect the building from any falling rocks

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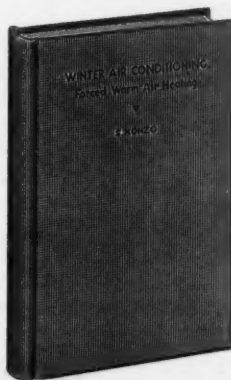
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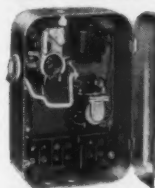
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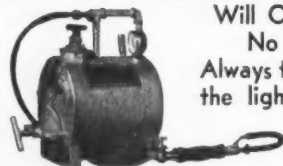
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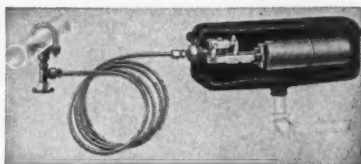
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Water Control**

from the cannon wall. Williams & Company offered "The Proof of the Pudding" a moving picture showing the expansion in the use of Monel metal wherever sanitation, cleanliness, easy maintenance is desired.

National Warm Air Meeting

(Continued from page 91)

peratures (135 deg. fan-on—100 deg. fan-off being called a low setting) showed better overall operating conditions with the lower bonnet setting than with higher bonnet temp. settings.

Probably the most striking test results portrayed by Prof. Konzo was the fact that in the Research Residence, fully insulated, with a system designed for three air changes per hour and delivering a total of 800 cfm with 600 fpm velocity at the register, it was possible to reduce register areas to registers of a size of 3 x 2 and 3 x 4 inches. Prof. Konzo pointed out that if these very small registers are used with corresponding small stacks, branches and mains the probable result will be an overall resistance in the system approaching 7/10 of an inch whereas if we use these small registers with technical code size branches, stacks and mains, we will restrict the overall resistance to approximately .35 of an inch W.G. Since high resistance in the system can result in undesirable characteristics and much trouble, Prof. Konzo recommended that until our furnaces are rated according to some such method as proposed in the oil-burning furnace rating code presented and until all contractors know precisely how fittings effect resistance and until our installation practices include

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the use of the Technical Code, it will be advisable to stick to prevailing practice.

Big Golf Tournament

The entertainment highlight of the mid-year meeting was the golf tournament at Olympia Fields. Pictures, better than words show the event.

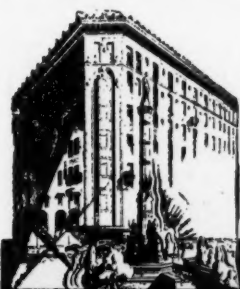
Seventy-nine golfers and some twenty non-golfers journeyed to Olympia Fields for the annual tournament, which was in charge of J. Harry Ebbert. The Chicago Convention Committee had provided a fine assortment of prizes for golfers and non-golfers alike. Low gross of the day was shot by Bud Clusserath and low net was won by L. R. Taylor. Second low gross went to Ralph King and Robert Mercer took second low net. Carl Andren had the longest drive, Paul Barth the least number of putts. B. A. Johnson shot pars on each of the par three holes and A. Galava duplicated this feat on the par five's.

Blind bogey prizes went to H. H. Hiller, W. E. Nesbit, R. J. Lorenz, Paul Penn, Mel Jackson, Ed French, Fred Samson, H. E. Nelson, E. B. Lau, Ed Maire and Ray Schmitz.

The highest gross score of the day meant a prize for T. E. Novakoski, Jr., with J. H. Van Alsbury distinguishing himself with the most strokes on any one hole. J. McCauley had the shortest drive; E. J. Steiskal had the most trouble on the par three holes and W. L. McGrath had the high net of the day.

The non-golfers fared well on the prizes, with the following being invited to take their choices at the trophy table:—G. G. Terris, C. S. Truxell, H. F. Hoy, Reid Mackin, George Boeddener, Al Lieser, Ray Schneiberg, J. O. Stephenson and J. D. Wilder.

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1	5/16" in 1/4"	1/4" x 2"	1/4" x 2"
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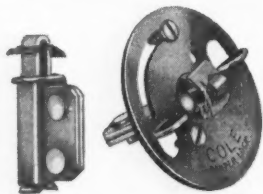


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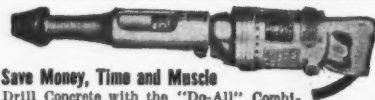
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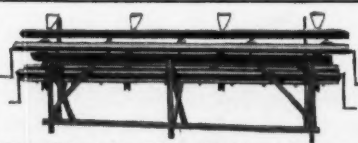
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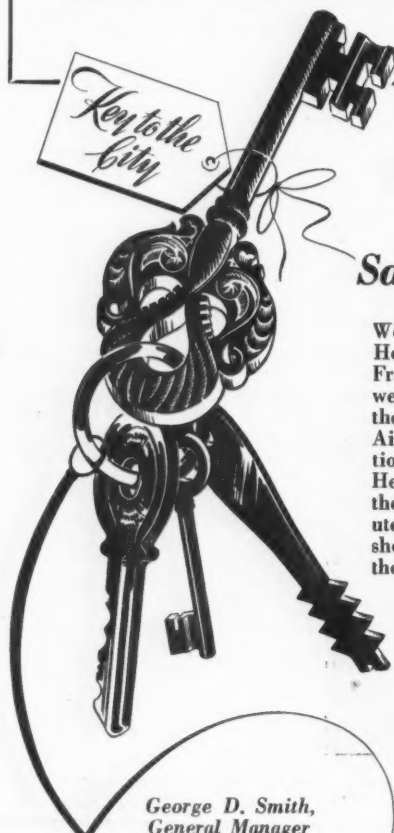
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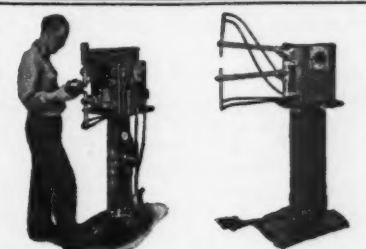


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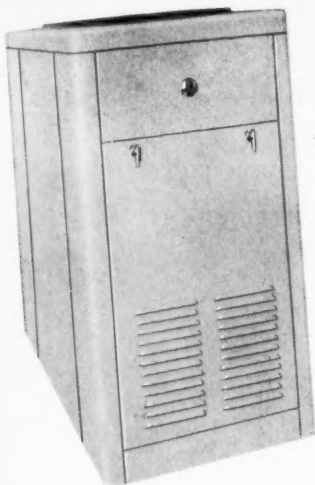
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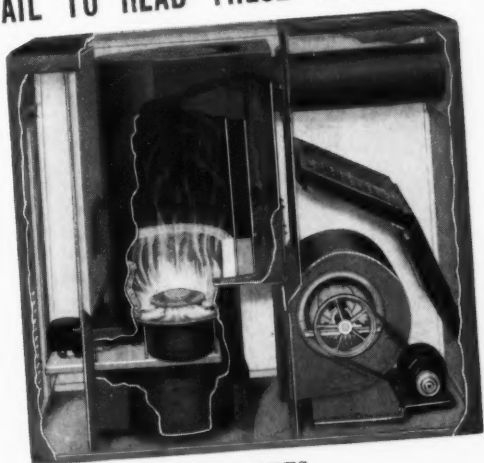
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3. GILCO VAPORIZING POWER BURNER properly installed and leveled to furnace at the factory.
4. REFRACTORY LINING aiding combustion and adding life to the furnace.
5. COMBUSTION CHAMBER heavy boiler plate steel welded
6. OUTER CASING beautifully finished in aluminum gray Hammerloid enamel.
7. RADIATOR heavy boiler plate steel, furnishing additional heating surface and reducing stack loss to a minimum.
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10. FILTERS.
11. QUIET, EFFICIENT BLOWER.

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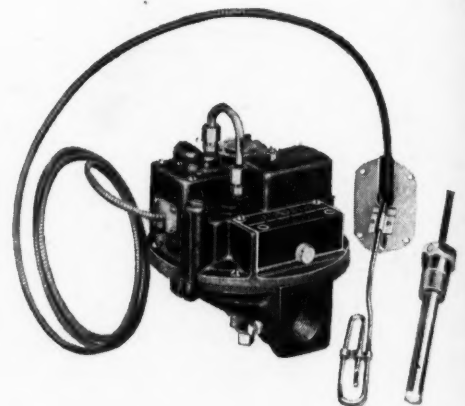
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